TEST AND EVALUATION MASTER PLAN (TEMP)

FOR

TRANSPORTATION COORDINATORS' - AUTOMATED INFORMATION FOR MOVEMENT SYSTEM II (TC-AIMS II)

Program Executive Office
Enterprise Information Systems
(PEO EIS)

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PART I -- SYSTEM INTRODUCTION

1.1 Mission Description.

The Transportation Coordinators' Automated Information for Movement System II (TC-AIMS II) is a top-down directed program that must address critical shortfalls in moving cargo and people in support of the Department of Defense (DoD) mission. This system must support the Fiscal Year (FY) 1987 Joint Chiefs of Staff (JCS) direction and the FY89 Defense guidance that provided a requirement for an automated capability to provide timely and accurate passenger/cargo movement information during force deployments. Further, system development and implementation must be consistent with FY95-99 Defense guidance that calls for support systems to provide "rapid strategic mobility and sufficient support and sustainment capabilities". TC-AIMS II must provide an integrated information transportation system capability for routine deployment, sustainment, and redeployment/retrograde operations by employing the same DoD and Service shipment policies and procedures in peace and war and in both the active and reserve forces. This system must be integrated with installation, unit, and depot-level supply systems to manage inbound and outbound movement (less Household Goods (HHG)) document and requisition information. TC-AIMS II must be capable of supporting routine and surge requirements and automate origin shipping/receiving and deployment; sustainment and redeployment/retrograde processes; produce movement documentation, unit move data; and furnish timely information to major commands (MAJCOMs/MACOMs), transportation component commands, United States Transportation Command (USTRANSCOM), and the joint deployment community. As a DoD source movement information system, TC-AIMS II must provide data for in-transit visibility (ITV) and control over cargo and passenger movement. TC-AIMS II requirements are documented in the Mission Need Statement (MNS), approved by the Director of the Joint Staff on 7 August 1997 and the Operational Requirements Document (ORD), which was signed 25 March 1999.

On 2 October 2002, the Assistant Secretary of Defense for Command, Control, Communications, Computers, and Intelligence (ASD(C4I)), approved full fielding of the Block 1 TC-AIMS II Version 3.01 to all Army units. The IT-OIPT had previously decided in July for limited fielding within USAREUR and the Navy. Functionality provided by TC-AIMS II Block 1 is listed in Attachment 1.

This TEMP focuses on the Test and Evaluation (T&E) of TC-AIMS II Block 2, Enhanced Unit Move. Block 2 functionality and minimum configurations for Operational Test (OT) are listed in Attachments 2 and 6. The Acquisition Decision Memorandum (ADM), dated 4 November 2000, stipulates that the TC-AIMS II Joint Program Manager shall resolve the TC-AIMS II block I requirement Test Incident Reports during Block 2 development. The ADM further stipulates that the Test and Evaluation Master Plan (TEMP) be updated to support Block 2 testing and evaluation .

1.2 System Threat Assessment.

Within the DoD, Automated Information Systems (AIS) are becoming more critical to the operation, efficiency, and effectiveness of Command, Control, Communications, Computers and Intelligence (C^4I); finance, personnel, security and logistics. Telecommunications technology has provided the ability to network systems worldwide to further improve efficiency and effectiveness. Telecommunications systems used for networking includes both public and DoD switched networks employing wire, fiber optic, microwave, and satellite links. AISs also frequently serve users through dial-up connections. Networks linking unclassified military systems, academic institutions, and the civilian sector have increased in number, as has ease of access.

The vast amounts of information these systems store, process and transfer makes them lucrative targets of a diverse, worldwide threat intended to compromise data, corrupt data, disrupt service, or to physically destroy. The threat is diverse in source, motivation, sophistication, technique, and time. It includes "hackers" fascinated by technical challenge, foreign Governments with military and economic interests, disgruntled employees, and inadvertent error. While the threat predominantly affects the operational phase of the system life cycle, it is present throughout system development and sustainment.

The battlefield threats to the TC-AIMS II include physical destruction, reconnaissance and surveillance, Information Warfare (IW), electronic warfare, chemical weapons, biological weapons, nuclear weapons and their Electro-Magnetic Pulse (EMP) effects, and directed energy weapons. It is possible that a threat force could detect, locate, and target TC-AIMS II from its Radio Frequency (RF) emissions. The Electronic Attack (EA) threat force that could detect and locate a TC-AIMS II communications includes ground-based and airborne jammers. Radio Frequency Weapons (RFW) could assist in jamming, degrading or destroying critical C^4I and automated weapon control systems.

The greatest threat to the TC-AIMS II system will be from IW which could take the form of malicious code insertion, remote insertion of false data, Internet Protocol (IP) spoofing, unauthorized computer access, direct and indirect signal attack, and threat to cable communications. The most likely threat will come from attacks directed against the TC-AIMS II system and the data it contains. This threat will come from unauthorized users attempting to gain access to and alter or destroy the information in the TC-AIMS II software. Although the physical destruction of the TC-AIMS II on the battlefield is a likely possibility, the IW threat is more likely. This is due to the current reliance on split based operations and reliance on the commercial communications capability, which unauthorized users can use to penetrate DoD AIS assets and the supporting telecommunications infrastructure, and the significant connectivity between the TC-AIMS II systems and the sustaining base AIS resources that provide them with information. An IW attack such as this could be mounted from anywhere in the world, either directly by the threat forces or by their agents.

1.3 System Description.

TC-AIMS II automates the processes of planning, organizing, coordinating, and controlling unit-related deployments, sustainment, day-to-day Installation Transportation Officer/Transportation Management Officer (ITO/TMO) operations, redeployment, and retrograde operations in support of the Defense Transportation System (DTS). It will interface with installation, unit and depot-level supply systems, the Global Transportation Network (GTN), Joint Operational Planning and Execution System (JOPES) through the use of the Joint Force Requirements Generator (JFRG) II; and will be capable of supporting both peacetime and wartime requirements. TC-AIMS II will produce movement documentation and unit move information. It will furnish timely information to MAJCOMs/MACOMs, Transportation Component Commands (TCC), USTRANSCOM, and the joint deployment community. As a DoD source movement information system, TC-AIMS II will be a primary source of information for ITV and transportation management over cargo and passenger movement during peace, operations other than war, and war. TC-AIMS II will integrate the functionality of selected service-unique transportation legacy systems into a single Automated Information System (AIS) migration system. It will consist of a scaleable, deployable, and regionalized system environment, that when fully developed, will be compliant with the Joint Technical Architecture (JTA) and Level 5 of the Defense Information Infrastructure (DII) Common Operating Environment (COE).

1.3.1 Current Block 1 Key Features and Subsystems.

TC-AIMS II is an evolutionary development that will be developed incrementally in Blocks 1-5. TC-AIMS II Block 1 provides the basic capabilities necessary to plan, coordinate, and execute unit deployment and re-deployment. The Block 1 software architecture provides the foundation for incrementally adding new capability during Blocks 2-5. Capabilities contained in these blocks included unit move enhancements, ITO/TMO and theater operations. These capabilities are further detailed in Attachments 1-3. Any additional capabilities will be incorporated based on Configuration Management Board (CMB) approved priorities.

The TC-AIMS II Block 1 architecture is a client-server implementation capable of being configured and reconfigured to support breakaway and standalone operations in both garrison and deployed environments. The TC-AIMS II configuration can be tailored by the user to meet his specific needs and operate within his unique hardware limitations and varying communication infrastructures.

TC-AIMS II consists of two Computer Software Configuration items (CSCI's) operating on Windows NT Version 4.0 and Windows 2000: (1) the Joint Data Library (JDL) which provides reference data to the core TC-AIMS II application, and (2) the TC-AIMS II core application which provides transportation planning and execution functions. The application is divided into six major functional areas, which are integrated through the database. The functional areas are described as:

- The Asset Management (AM) functional area provides capabilities to enter and maintain information on organizational personnel, equipment, and supply assets. AM has facilities for importing personnel and equipment data from designated systems for each service.

- The Movement Planning (MP) functional area provides the capabilities to prepare movement plans, including lists of equipment and personnel to be moved, movement routes and movement conveyance. Movement plans may include several legs using different modes of transportation such as convoy, rail, air and sea. MP provides facilities to load equipment and personnel onto the selected conveyance.

- The Movement Execution (ME) functional area provides the capabilities to refine and execute the movement plans. Execution of movement plans will generate Transportation Control Numbers (TCNs) for each item being moved and generate associated movement documentation, such as packing lists and Transportation Control Movement Documents (TCMDs). These movement documents can then be transmitted to other systems via its interface exporting capabilities.

- The Load Planning (LP) functional area directly supports the MP and ME functional areas by providing the Loader service. The Loader provides capabilities to automate plans for loading material items or personnel onto conveyances such as rail cars, busses, trucks, planes, and ships.

- The Movement Coordination (MC) functional area provides the capability to request, schedule, and coordinate assets to support a movement plan. Support assets include items such as trucks and buses available through a base or unit's motor pool.

- The Enablers functional area provides a variety of capabilities that support or enable the other functional capabilities to be performed. The Enabler capabilities include general AIS services (e.g., Open, Save, Cut Paste, Generate Records, Copy, and others), non-visual services (e.g., Linker, Shipment Unit Number (SUN) Number generation), and the interface to Automatic Identification Technology (AIT). The Enablers also provide the TC-AIMS II administration function to create users' passwords and grant access permissions.

Multi-media training provide computer-based training that as an additional method of training TC-AIMS II from every workstation. The multi-media training is on a separate Compact Disk-Read Only Memory (CD-ROM) that must be periodically updated to reflect changes to the system. It will satisfy a majority of the requirements for individual, collective and sustainment training for instructor and key personnel (IKP). users, supervisors/managers, and System Administrators. The CD-ROM for TC-AIMS II will provide users with direct individual access to a multi-media training asset to assist in learning TC-AIMS II and will be a resource to provide standalone refresher training with an extended help function.

1.3.2 Block 2 Key Features and Subsystems.

Block 2 incorporates the functionality of Block 1 and provides Enhanced Unit Movement Capability and access to the Block1 functionality through a Web Browser. New features are added based on functional requirements provided in Incremental Development Packages (IDP) 0 and 1 from the Joint Requirement Office (JRO). In addition, Block 2 includes requirements for Enterprise Management; Web-enable Movement Coordination. This provides the foundation to fully migrate TC-AIMS II to a web environment in Block 2.

1.3.3 Interfaces With External Systems.

In addition to the following, the TC-AIMS II Block 2 capability will continue to provide all of the interfaces that were available in Block 1 less CAEMS, CALM, and MAGTF II: (See Table 1-1 for the complete list Block 2 interface capability).

1. **Automated Air Load Planning System (AALPS) Import.** The AALPS interface provides a two-way data exchange between AALPS and TC-AIMS II to support automated aircraft load planning. The Interface eliminates the need for users to enter cargo, chalk, and passenger movement characteristics on both systems by providing an electronic means of synchronizing the information between the two systems
2. **Global Transportation Network (GTN) Automatic Transactions.** The GTN interface enables TC-AIMS II to pass detailed deployment data to GTN/ for both cargo and personnel as often as required. GTN will store this information in a centralized database designed to integrate data obtained from diverse transportation systems. GTN utilizes the data to provide Total Asset Visibility (TAV) over deployed assets. A new feature to Block 2 includes the ability for TC-AIMS II to automatically send GTN ITV exports based on system-detected circumstances.
3. **Joint Force Requirements Generator (JFRG) II Transaction.** The JFRG interface provides for a two-way data exchange between JFRG II and TC-AIMS II. JFRG II sends TC-AIMS II unclassified ULN header information, movement requirements, and personnel requirements. After sourcing the requirements, TC-AIMS II sends JFRG the updated ULN header, movement, equipment, and personnel information. This Block 2 enhancement to the interface increases usability of both JFRG II and TC-AIMS II by providing their users with an interface that allows them to pass plan changes between the two systems without creating entirely new plans each time a change occurs.
4. **Power Track.** The Power Track interface provides a one-way data exchange between TC-AIMS II and US Bank Power Track to support automated Bill of Lading processing. The Power Track Interface is used when either the Global Freight Management (GFM) or the Cargo Movement Operating System (CMOS) are not available to generate required Bills of Lading. This interface supports both rail and truck movements that require commercial assets.

1.4 Measures of Effectiveness and Suitability.

Measures of Effectiveness and Suitability are addressed in Sections 4 and 5 of the approved ORD dated 25 March 1999. The associated Key Performance Parameters (KPP) is identified in Table 1-5. Requirements/functionality implemented in Block 2 that is to be tested during the IOT is shown in the annotated ORD extract below. Annotation is included to show not only what functionality is to be tested in Block 2, but also functionality that is not to be tested. Functionality not tested with Block 2, will be addressed in future Blocks as defined by the JRO and approved by the CMB.

1.4.1 Mission Performance Objective.

1.4.1.1 Issue (Critical).

TC-AIMS II must receive electronic data input from external materiel management, personnel, advance shipment, and Time Phased Force Deployment Data (TPFDD) feeder systems; and AIT devices.

1. (Critical, KPP). The system must accept data, in time frames that support operational mission or task completion, from the external systems listed in Table 1-1 below (See Note 1 for speed of service description). The threshold is that the system must accept properly formatted data in accordance with the Systems Interface Agreements (SIA) from those systems identified. The requirements/functionality to be verified by Block 2 testing is annotated by shading in the ORD extract below (Table 1-1). Interfaces identified as 'threshold' requirements are critical KPP system interfaces. The Objective column indicates those remaining systems that will interface with TC-AIMS II at a future date (NOTE: Output requirements are described later in Issue 1.3.a.(c). To avoid repetition, the system interface output requirements are identified only in Table 1-1.

Note: Cell Shading – will test in Block 2

Table 1-1 Systems Interfaces

System	SER	Description	Input	Output	Thresh	Obj
AALPS	J	Automated Air Load Planning System	X	X	X	
AMS	J	Automated Manifesting System	X			X
AMSS	J	Ammunition Management Standard System	X			X
ATAC-AF	N/(AF)	Advanced Traceability and Control		X	X	
ATLASS-1	MC	Asset Tracking Logistics Automated Supply System	X	X[1]	X	
CAEMS[2]	MC	Computer-Aided Embarkation Management System				
CALM [3]	J	Computer-Aided Load Manifesting				
CAS-B	AF	Combat Ammunition System Base level	X	X		X
GFM	J	CONUS Freight Management System	X[4]	X	X	
CMOS	J	Cargo Movement Operations System	X	X	X	
COMPASS	A	Computerized Movement Planning and Status System		X	X	
CSSCS	A	Combat Service Support Control System		X		X
DMLSS	J	Defense Medical Logistics Standard System	X	X	X	
DSS	J	Distribution Standard System	X	X	X	
DTTS	J	Defense Transportation Tracking System	X	X		X
EDI Transactions	J	Electronic Data Interchange (EDI) with Carriers	X	X		X
FACTS	J	Financial and Air Clearance Transportation System	X	X	X	
GATES	J	Global Air Transportation and Execution System	X[5]	X	X	
GCCS-A	A	Global Command and Control System – Army	X	X		X
GCSS-A	A	Global Combat Support System-Army	X	X		X
GCSS-AF	AF	Global Combat Support System-Air Force	X	X		X
GDSS	J	Global Decision Support System	X		X	
GOPAX	J	Group Operational Passenger System		X	X	
GSA/ADNET	J	GSA / Depot Transportation System (ADNET)	X		X	
GTN	J	Global Transportation Network		X	X	
HEROS V	A	German Convoy Scheduler	X	X		X
IBS	J	Integrated Booking System	X[6]	X	X	
ICODES	J	Integrated Computerized Deployment System	X	X	X	
ILSMIS	N	Integrated Logistics Support Management Information System	X		X	
ILS-S	AF	Integrated Logistics System - Supply	X	X	X	
JFRG II	J	Joint Force Requirements Generator	X	X	X	
LOGMOD	AF	Logistics Module	X	X	X	
MAGTF II[7]	MC	Marine Air Ground Task Force II				
MANPER-B	AF	Manpower Personnel Readiness Module	X	X	X	
MDSS II	MC	MAGTF Deployment Support System	X	X	X	
MMS	N	Material Management System	X		X	
MOBCON	A	Mobilization Control	X	X		X
MPMIS	A	Military Police Management Information System	X	X		X

System	SER	Description	Input	Output	Thresh	Obj
MTS	A	Military Tracking System	X	X		X
MTMS	A	Munitions Traffic Management System	X	X		X
NCFMIS	N	Naval Construction Force Management Information System	X		X	
NSIPS	N	Navy Standard Integrated Personnel System	X		X	
NIMMS	N	NADEP Inventory Material Management System	X	X	X	
ROLMS	N	Retail Ordnance Logistics Management System	X		X	
SBSS/ILS-S	AF	Standard Base Supply System	X	X	X	
SIDPERS 3	A	Standard Installation Division Personnel System	X		X	
SUPMIS	N	Supply Management Information System	X	X	X	
TAMMIS	MC	Theater Army Medical Management Information System	X		X	
TC-ACCIS	A	Transportation Coordinators' Automated Command and Control Information System	X	X	X	
TC-AIMS II	J	Transportation Coordinators' – Automated Information for Movement System II	X	X	X	
TrAMS	A	Transportation Automated Measuring System	X			X
UDAPS(2)	N	Uniform ADP System	X	X	X	
UD/MIPS	MC	Unit Diary/Marine Corps Integrated Personnel System	X		X	
WRS	MC	War Reserve System	X		X	
WPS	J	Worldwide Port System		X	X	

(Footnotes)

[1] ATLASS MPF functionality (defer to Block 4)

2. CAEMS (Waived by JRO)
3. CALM (Requirement Waived)
4. GFM (defer to Block 3)
5. GATES Load Plan Correlation (defer to Block 5)
6. IBS EUCR (Defer to Block 4)
7. MACTFII (Waived by JRO)

Note 1: Speed of Service. While speed of service is vital to mission accomplishment, speed of service is dependent on several variables, i.e., existing telecommunications infrastructure outside of the influence of the TC-AIMS II system (hardware and software).

Note 2: As systems development continues; review of this table should be a continuous, on-going process to ensure new systems are included as necessary and out-of-date systems are deleted as they become unsupportable.

2. (Critical, KPP). The system must have a capability to receive input from peripheral AIT devices capable of reading from the AIT media listed in Table 1-2.

Table 1-2 AIT Device Input Parameters

Type	Description	Threshold	Ver	Objective	Ver
Linear Bar Codes	Code 3 of 9 Mil Ship Labels (MSL's), Logistics App of Automated Marking and Reading Symbols (LOGMARS), TCN labels	Completeness: .90 Accuracy: .95 Speed: NA	Block 1	Completeness: .95 Accuracy: .98 Speed: NA	Block 1
2D Bar Codes	Military Handbook (MH) 10.8, Portable Data File (PDF) 417 Labels	Completeness: .90 Accuracy: .95 Speed: NA	Block 1	Completeness: .95 Accuracy: .98 Speed: NA	Block 1
RF Identification (ID) (RFID) tags	Equipment ID tags	Completeness: .85 Accuracy: .90 Speed: Ability to completely read a tag fixed to a vehicle traveling <= 25mph	Block 1	Completeness: .90 Accuracy: .98 Speed: Ability to completely read a tag fixed to a vehicle traveling <= 45mph	Block2
Optical Memory Cards (OMCs)	Defense Logistics Agency (DLA) AMS Cards	Completeness: N/A Accuracy: N/A Speed: N/A	Block 4	Completeness: .95 Accuracy: .98 Speed: <= 1 second per card	Block 4
SMART Cards	Common Access Cards (CACs)	Completeness: .90 Accuracy: .95 Speed: N/A	Block 2	Completeness: .95 Accuracy: .98 Speed: <= 1 second per card	Block 2

Notes: 1. Completeness measures the thoroughness of sought information. The database must be designed such that all required information elements necessary to produce specified outputs or read defined inputs are included. This is not a measure of data quality.
2. Accuracy describes the format, content, compatibility, and validity (size, class or type) consistent with the TC-AIMS II data dictionary. The DoD Data Model (DDM) should be used as a guideline to facilitate data compatibility and interoperability with other systems. Beyond these definitions, TC-AIMS II will not be responsible for editing faulty information.
3. Speed: Some items are "Not-Applicable (NA)" since laser scan reads occur at light-speed.
4. Speed for OMC cards implies both read and write times.
5. SMART Cards (CAC Cards). TC-AIMS II will facilitate the administrative processing and manifesting of passengers through the ability to read DoD standard manifest data elements from DoD standard CAC Cards.

1.4.1.2 Issue (Critical).

TC-AIMS II must provide an automated ability for users to process data and information into decisions and execution actions to accomplish appropriate transportation and deployment tasks.

1. (Critical, KPP). The system must be able to import, store, process, update, and export operational data volume in support of Major Theater War deployment scenarios and traffic management operations. The threshold is that TC-AIMS II provides the ability for

users to accomplish job-related tasks efficiently or as well as the best of breed of existing systems. The objective is for functional activities defined in this ORD to be automated in such a way as to reduce time required to perform those functions by at least 20 percent. This parameter assumes that competent and trained users, who understand how to prepare required documents, are using the system as part of their normal duties.

2. The system must meet the Processing Data Parameters listed in Table 1-3.

Table 1-3 Processing Data Parameters

Activity Description	Threshold	Ver	Objective	Ver
Maintain unit level deployment database for unit level equipment, container and pallet, and personnel lists associated with any Battalion or squadron level unit.	Standalone: 75,000 cargo detail records. Single Server: 1,000,000 cargo detail records.	Block 1	Standalone: 500,000 cargo detail records. Single Server: 3,000,000 cargo detail records.	Block 2
Create, receive, maintain, and transmit Parent-Child deployment relationships to include use of deployment echelons. (Example: Box on a truck, pallet in container)	Standalone: 98,901 parent-child relationships. Single Server: 1,483,515 parent-child relationships.	Block 1	Standalone: 197,802 parent-child relationships. Single Server: 1,978,020 parent-child relationships.	Block 2
Movement Planning of cargo and personnel detail - aggregate Unit Level Databases. (Capability to merge or "rollup" Unit Level Databases up the chain of command, assuming an average of 300 cargo line items per Unit Line Number (ULN), and 250 personnel billet line items per ULN).	Standalone: 2,500 ULNs containing sourced cargo or personnel detail records matched to UTC Cargo or personnel force requirement details. Single Server: 10,000 ULNs.	Block 1	Standalone: 5,000 ULN records. Single Server: 50,000 ULNs	Block 2
Movement Planning: Ability to pass cargo and personnel detail data to JOPES feeder systems and GTN to report, load plan, manifest, and source ULNs of a force requirement.	Sealift ULNs: 10 C-Days worth of data Airlift ULNs: 3 C-Days worth of data. Local or Common User Land Transportation (CULT) ground transportation: 30 days	Block 1	Sealift ULNs: 30 C-Days Airlift ULNs: 7 C-Days Local or CULT ground transportation: 60 days	Block 1
Ship Load Planning and Manifesting. Ability to store and process cargo data details for export to shipload planning systems in support of port operations and embarkation (Based on a typical Landing Helicopter Amphibious (LHA) or Fast Sealift Ships (FSS) ship load plan).	Cargo detail data for 5 ships at a single terminal or water port during a 72-hour period.	Block 1	Cargo detail data for 10 ships at a single terminal or water port during a 72-hour period.	Block 1
Aircraft Load Planning and Manifesting (Based on a typical C-141 aircraft load plan).	Cargo and Personnel detail data for 50 aircraft sorties processed at a single air terminal during a 24-hour day.	Block 1	Cargo and personnel detail data for 100 aircraft sorties processed through a single air terminal during a 24- hour day.	Block 2

Activity Description	Threshold	Ver	Objective	Ver
Rail Load Planning (Based on a 100 car train)	Cargo detail data for 25,000 shipment units.	Block 1	Cargo detail data for 60,000 shipment units.	Block 2
Surface and Ground Transportation Modes. Receive or prepare, generate, and transmit Bills of Lading (Government Bill of Lading (GBLs)/Commercial Bill of Ladings (CBLs)), Tonnage Distribution Rosters (TDRs), or TCMDs per 24-hour day:	GBLs[5] and CBLs: 500 TCMDs: 1,000 TDRs: 25	Block 1	GBLs and CBLs: 1,000 TCMDs: 5,000 TDRs: 100	Block 2
Convoy Movement Requests (based on a 25-vehicle convoy).	25 per day	Block 1	50 per day	Block 1
Ad-Hoc Queries. A trained user can extract a simple query, such as; determining equipment density for a given unit, or preparing a list of GBLs moving equipment to a given port.	45 minutes to formulate the query and obtain correct results.	Block 3	25 minutes to formulate the query and obtain correct results.	Block 3
Standard Reports.	20 minutes	Block 1	10 minutes	Block 1

1.4.1.3 Issue (Critical).

TC-AIMS II must produce outputs in the form of electronic interfaces (to external mode clearance, cargo booking, load planning, transportation Command and Control (C2), TPFDD feeder, and common use transportation systems, as well as produce standard labels, tags, forms, and reports used to accomplish transportation and deployment functions.

1. (Critical, KPP). TC-AIMS II must interface with the systems identified as outputs in Table 1-1 above.

2. (Critical, KPP). TC-AIMS II must properly generate reports, forms, labels, tag data, OMC or CAC data as listed in Table 1-4 below. "Properly" means that correct data is placed in the appropriate fields, in which the text is readable by humans, and that barcodes, cards, and/or tags are readable by appropriate TC-AIMS II AIT devices. The parameters below assume that a printer, RFID tag read/write device, and OMC/CAC read/write devices are directly connected to a workstation hosting its own TC-AIMS II database.

[6] ORD terminology; moving away from term GBL, transitioning to CBL.

Table 1-4 Output Descriptions

Output Type	Description	Threshold	Ver	Objective	Ver
Reports	Ad hoc or standard (pre-formatted) (Ad hoc to be provided in Block 3)	Completeness: .95 Accuracy: .95 Speed: <= 1 minute per page	Block 1	Completeness: .98 Accuracy: .98 Speed: <= 30 seconds per page	Block 1
Standard Forms	Defense Department (DD), Standard Format (SF), Navy/Marine Corps (NAVMC), Air Force (AF), Army Europe (AE) and other paper outputs	Completeness: .95 Accuracy: .95 Speed: <= 1 minute per page	Block 1	Completeness: .98 Accuracy: .98 Speed: <= 30 seconds per page	Block 1
Labels	LOGMARS, MSL, and Equipment ID labels	Completeness: .95 Accuracy: .95 Speed: <= 30 seconds per label	Block 1	Completeness: .98 Accuracy: .98 Speed: <= 10 seconds per label	Block 1
Radio Frequency Tags (write data)	256 Kb or larger capacity	Completeness: .875 Accuracy: .875 Speed: <= 1 minute per tag	Block 1	Completeness: .90 Accuracy: .90 Speed: <= 30 seconds per tag	Block 1
OMC Cards		Completeness: .95 Accuracy: .95 Speed: <= 30 seconds per card	Block 4	Completeness: .98 Accuracy: .98 Speed: <= 10 seconds per card	Block 4
Smart Card (CAC) (write data)	For Barcodes in Block 2, electronic chip and magnetic strip to be determined	Completeness: .95 Accuracy: .95 Speed: N/A	Block 2	Completeness: .98 Accuracy: .98 Speed: <= 30 seconds per card	Block 2

1.4.2 Logistics Supportability Objective.

1.4.2.1 Issue: TC-AIMS II must be logistically supportable.

1. TC-AIMS II will be fielded on COTS computers that meet JTA compliance standards, and Service-specific computer hardware acquisition requirements. Parameter is met in Block 1.

2. TC-AIMS II will be supported using standard Service systems support programs in place for Automated Information Systems at the time of fielding. Parameter is met in Block 1.

1.4.3 Reliability, Availability, and Maintainability Objective.

1.4.3.1 Issue. TC-AIMS II must be reliable.

1. TC-AIMS shall have a Mean Time Between Operational Mission Failure (MTBOMF) of 300 hours (threshold), 500 hours (objective). Mission duration for one crew is 12 hours.

MTBOMF is the anticipated length of time a system will be operational between operational mission failures. An operational mission failure is defined as that condition in which the system cannot perform or accomplish the stated mission. Failure can be due to software, hardware, or operator error. Threshold parameter is met in Block 1.

1.4.3.2 Issue. TC-AIMS II must be available.

1. TC-AIMS II availability will be 0.95 (threshold); 0.975 (objective). Threshold parameter is met in Block 1.

2. TC-AIMS II non-availability will be correctable 90% of the time by simply rebooting the computer and the reboot will take less than 3 minutes. Parameter is met in Block 1.

3. When TC-AIMS II non-availability is not correctable by a reboot, the TC-AIMS Help Desk must be able to respond to and correct the problem within 2 hours 80% of the time.. Parameter will be met in Block 2.

4. For Help Desk calls that cannot be successfully corrected within 2 hours, the problem will be corrected within 24 hours 99% of the time. Parameter will be met in Block 2.

1.4.3.3 Issue. TC-AIMS II must be maintainable.

1. Maintenance will be conducted in accordance with the maintenance concept, the Integrated Logistics Support Plan (ILSP), and the Service annexes to the ILSP. Parameter is met in Block 1.

2. Mean Time to Repair (MTTR) at the organizational level (system operation) will be 1 hour (threshold); 30 minutes (objective). Parameter will be met in Block 2.

3. MTTR at the organizational level (lost information) is 8 hours (threshold); 1 hour (objective). Threshold parameter is met in Block 1.

1.4.4 Mobility, Deployability, and Transportation Objective.

1. TC-AIMS II must be capable of movement to, from and within the Joint or Service Component Area of Operations.

2. All TC-AIMS II equipment must be capable of movement by DoD personnel as a 2-person lift with a weight maximum of 70 pounds (threshold); as light as technically feasible (objective). Threshold is met in Block 1. Objective will be met in an IDP.

3. All TC-AIMS II equipment must be capable of movement by all standard modes of transport to include United States Navy (USN) shipping, commercial or military aircraft, and military tactical vehicles.

4. The system will require no unusual loading/handling equipment. Parameter is met in Block 1.

1.4.5 Organizational Impact Objective.

The TC-AIMS II should have no impact on the structure of the unit to which assigned. Fielding of TC-AIMS II to any unit should not require the assignment of additional occupational specialties to the organization. Parameter is met in Block 1.

1.4.6 Personnel Selection and Training Objective.

TC-AIMS II in some cases replaces standalone systems that were not built to operate in a network environment. TC-AIMS II should be able to be operated and maintained with minimal additional training for users having the appropriate Military Occupation Specialty (MOS), beyond that currently taught for the legacy systems being replaced.

1. TC-AIMS II system operators should require no more than two weeks (threshold); one week (objective) system training to become proficient operators of the system. Threshold is met in Block 1 for US Army and Navy. Objective will be met in a future Block.

2. TC-AIMS II system administrators should require no more than two weeks (threshold); one week (objective) training to allow them to become proficient system administrators of the system. Parameter is met in Block 1.

3. TC-AIMS II database administrators should require no more than two weeks (threshold); one week (objective) training to allow them to become proficient database administrators of the system. Parameter is met in Block 1.

1.4.7 Human Factors and Safety Objective.

1.4.7.1 Issue. TC-AIMS II human factors will support operation, maintenance, and support of the system.

TC-AIMS II will employ intuitive operating procedures (based on the processes that are being automated) characterized by a consistent graphic user interface across the range of applications. Parameter will be met in Block 2.

1. Visual indicators and screens will be easily readable in all ambient light conditions without the need for ancillary equipment. Parameter is met in Block 1.

2. TC-AIMS II shall provide the capability for system data input and control using multiple means (keyboard and mouse or trackball). Parameter is met in Block 1.

1.4.7.2 Issue. TC-AIMS II does not present major safety or health hazards while being operated, maintained, or supported.

1. TC-AIMS II shall contain no hazards that will cause death, severe occupational illness, or I irreversible damage to health. Parameter is met in Block 1.

1.4.8 Electromagnetic Environmental Effects (E3).

1. Services are required to procure hardware that meets the E3 requirements of DoD Regulation 5000.2R as they pertain to Service procurement of hardware for use with TC-AIMS II.

1.4.9 Key Performance Parameters (KPP).

Table 1-5 Key Performance Parameters[6]

DESCRIPTION	THRESHOLD:	Ver	OBJECTIVE	Ver
Interoperability (Data Input)	Accept properly formatted data From 100% of top-level critical interfacing systems as represented in Table 1-1.	Block 1	Accept properly formatted data from 100% of all interfacing systems as represented in Table 1-1.	Block 5
Interoperability (Data Output)	Export properly formatted data to 100% of top-level critical interfacing systems as represented in Table 1-1.	Block 1	Export properly formatted data to 100% of all interfacing systems as represented in Table 1-1.	Block 5
AIT	Linear bar code. 2D bar code. Radio frequency tag as represented in Table 1-2	Block 1	Threshold plus Optical Memory Card and Smart Card (CAC)	Block4
Process Data	Ability for users to accomplish tasks efficiently or as well as "best of breed" of existing systems as represented in Table 1-3	Block 2	Reduce time to perform functions at least 20 percent.	Block 5
Data Output	Export properly formatted data to current systems as represented in Table 1-4	Block 2	Per ORD Table 4, Output Descriptions	Block 5
Document Generation	Forms. Labels. Reports except Ad hoc as represented in Table 1-4	Block 1	Threshold plus Optical Memory Card and Ad hoc reports	Block 4

[6] Parameters only met for Army and Navy

1.5 Critical Technical Parameters (CTPs).

The CTPs at Attachment 5 are derived from the ORD critical system characteristics and technical performance measures, and will include the parameters in the Acquisition Program Baseline. The demonstrated values in the matrix will be updated after each Developmental Test (DT) phase is completed. As a minimum, these thresholds must be met before TC-AIMS II can proceed to the Operational Test and Evaluation (OT&E) phase. The CTPs, which support the measures of effectiveness and suitability, are supported by the issues and criteria contained in the System Evaluation Plan (SEP). System compliance will be documented in the Independent Evaluation Report (IER). Although the CTPs outlined in the table are labeled critical, the issues and criteria addressed in the SEP must be evaluated in total to ensure adequate performance of the extensive capabilities required by the ORD.

1.6 Interoperability Certification (IOPCERT).

TC-AIMS II must satisfactorily meet the criteria established by the Joint Interoperability Test Command (JITC) for Joint Interoperability Certification. IOPCERT will be conducted in accordance with a JITC Interoperability Certification Evaluation Plan (ICEP).

PART II -- INTEGRATED TEST PROGRAM SUMMARY

1.1. Integrated Test Program Schedule (ITPS). The PM TIS will seek a Full Scale Production Decision Review (FSPDR) to field the TC-AIMS II Block 2 Enhanced Unit Move and Web Enabled Capability in August 2003 for the Army and Navy, and by December 2003 for the Marine Corps.

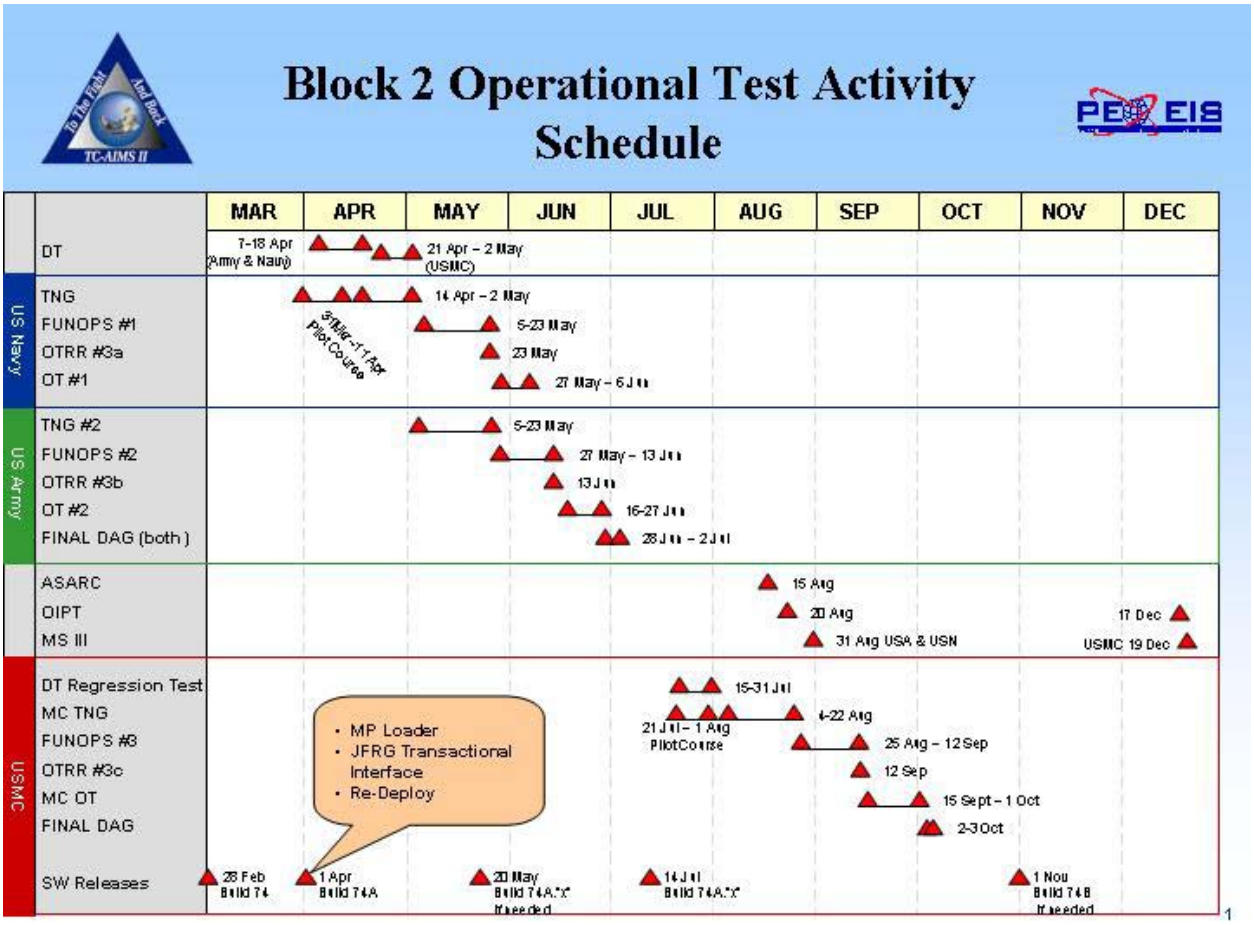

Figure 2-1 Operational Test Schedule

Table 2-1 POM funding profile depicts program funding from FY03 through FY09 to develop Blocks 3 through 5.

Table 2- 1 POM Funding Profile

Category	FY03	FY04	FY05	FY06	FY07	FY08	FY09
OMA	9.6	11.7	13.6	13.9	25.6	26.2	26.3
OPA	11.8	17.8	16.5	30.3	28.3	26.4	26.2
RDTE	10.3	16.0	18.1	17.7	23.0	18.4	18.3
Total	31.7	45.5	48.2	6.16	76.9	71.0	70.8

NOTE: * Source: -POM 03-09

Table 2-2 Operational Test Activity Matrix, below, identifies Key Test Activity/Events and dates for Block 2 testing.

Table 2- 2 Block 2 Operational Test Schedule Matrix

Activity	Planned Date Completed	Actual Date Completed
Operational Test Readiness Review (OTRR) 1	September 2002	
TC-AIMS II – Block 2 Unit Movement (UM) Enhancement	February 2003	
Software Qualification Testing (SQT)	February 2003	
Software Development Test (DT) –Block 2	April-May 2003	
DT Regression Test (Marine Corps)	15-31July 2003	
Test Report Process – Block 2	March 2003	
Training 1 (Navy)	April 2003	
Training 2 (Army	May 2003	
Training 3 (Marine Corps)	August 2003	
OTRR2	April 2003	
Functional Operations (FUNOPS) Navy	May 2003	
Functional Operations (FUNOPS) Army	May-June 2003	
Functional Operations (FUNOPS) Marine Corps	August –September 2003	
OTC Pilot Test (Navy)	May 2003	
OTC Pilot Test (Army)	June 2003	
OTC Pilot Test (Marine Corps)	August 2003	
OTRR3 (Navy)	May 2003	
OTRR3 (Army)	June 2003	
OTRR3 (Marine Corps)	September 2003	
OT (plan window) (Navy)	May-June 2003	
OT (plan window) (Army)	June 2003	
OT (plan window) (Marine Corps)	September-October 2003	

2.2 Management.

The Under Secretary of Defense for Acquisition & Technology (USD(A&T)) designated the Army as the TC-AIMS II lead service in November 1995. Within the Army, the Director of Information Systems for Command, Control, Communications, and Computers (DISC4) provides acquisition oversight and technical direction. The Army Deputy Chief of Staff for Logistics (DCSLOG) is the TC-AIMS II proponent. The TC-AIMS II PM TIS manages the development, testing, fielding, and initial post deployment software support. The Assistant Secretary of Defense for Command, Control, Communications and Intelligence (ASD(C3I)) chairs the TC-AIMS II Information Technology Overarching Integrated Product Team (IT-OIPT) and is the Milestone Decision Authority (MDA). The Deputy Under Secretary of Defense for Logistics (DUSD(L)) is the Office of the Secretary of Defense (OSD) Principal Staff Assistant (PSA) for TC-AIMS II. The Assistant Deputy Under Secretary of Defense for Transportation Policy (ADUSD-TP) also chairs the Joint Transportation Management Board (JTMB) which provides TC-AIMS II guidance and vision. U.S. Joint Forces Command serves as the joint user representative and chairs the Joint Requirements Board (JRB) responsible for defining, receiving, reviewing, validating, prioritizing, approving, and tracking functional requirements.

TC-AIMS II project manager reports through the Program Executive Office, Enterprise Information Systems (PEO EIS) to the Army G4. The TC-AIMS II project manager chairs Working-level Integrated Product Teams (WIPTs) in the areas of Testing, Technical, Security, Cost, Communications, and Integrated Logistics Support. The United States Army Test and Evaluation Command (ATEC) is the lead Operational Test Agency (OTA) for TC-AIMS II, and are being supported during Operational Testing (OT) by the Marine Corps Operational Test and Evaluation Activity (MCOTEA).

2.2.1 Participants.

2.2.1.1 PM TIS.

The PM TIS manages the design, development, testing, fielding, and logistics support planning for TC-AIMS II and develops the TEMP. The PM TIS is staffed by the participating Components in accordance with the May 1997 Joint Staffing Memorandum Of Agreement (MOA) and Army policies for program office staffing. The PM TIS staff is augmented by matrix support from various Army activities and program support contractors.

2.2.1.2 PEO EIS.

PEO EIS provides management and acquisition oversight of the PM TIS and provides representation to the JRO, JTMB and CMB. The PEO EIS forwards the TEMP for staffing and approval.

2.2.1.3 Department of the Army G4.

The Army G4 is the Army staff proponent for TC-AIMS II and is the focal point for Army lead service responsibilities. The G4 represents the Army on the JTMB and CMB. The G4 will be the user representative for decisions delegated to the PEO EIS. The G4 signs the User Representative Concurrence page for the Army.

2.2.1.4 Deputy Under-Secretary of the Army (Operations Research) (DUSA-OR).

The DUSA-OR signs Lead Service Approval of the TEMP.

2.2.1.5 Office of the Secretary of Defense/Office of the Assistant Secretary of Defense (OSD/OASD) (C3I).

OSD/OASD (C3I) is the TC-AIMS II MDA and the Principal Director for OSD approval.

2.2.1.6 Office of the Secretary of Defense/Director, Operational Test and Evaluation (OSD/DOT&E).

OSD/DOT&E exercises oversight of all aspects of TC-AIMS II OT&E. DOT&E reviews and approves the TC-AIMS II TEMP, SEP, and Event Design Plan (EDP). After considering the results of OT&E and input provided by the OTAs, DOT&E provides an independent assessment of the operational effectiveness and suitability of the system to the IT-OIPT and to Congress. The DOT&E is the OSD approval for the TEMP.

2.2.1.7 Army Test and Evaluation Command (ATEC).

ATEC is the lead OTA for TC-AIMS II. ATEC exercises overall responsibilities to plan and conduct TC-AIMS II OT&E, report results and provide system-level evaluations of effectiveness, suitability and survivability.

1. United States Army Operational Test Command (OTC): OTC plans, coordinates, and conducts TC-AIMS II operational testing.

2. United States Army Evaluation Center (AEC): AEC performs the operational evaluation of the TC-AIMS II system, and produces the System Evaluation Report (SER) and Independent Evaluation Briefing (IEB) for DOT&E and the MDA.

2.2.1.8 Joint Interoperability Test Command (JITC).

The JITC recommends certification of system interoperability by observing tests and reviewing test results for interoperability. The JITC will participate with the testing agencies to ensure that duplication is minimized and that data collected are valid and sufficient for Joint Interoperability Certification purposes. As a member of the ATEC Systems Team (AST), JITC works in consultation and coordination with the AST members to provide Joint Interoperability Certification test results and SER input for TC-AIMS II upon the conclusion of testing. Based on the successful demonstration of interoperability requirements, including conformance with the Joint Interoperability and Engineering Organization (JIEO) Standards Profile for TC-AIMS II,

the JITC will be responsible for Joint Interoperability Certification. The JITC will provide the Program Manager (PM) with an interoperability assessment letter.

2.2.1.9 United States Joint Forces Command (JFCOM).

U.S. Joint Forces Command will serve as the joint user representative for TC AIMS II as it executes it's mission as the Joint Deployment Process Owner as delineated in the Unified Command Plan and DoD Directive 5158.5, November 12, 2001, *Joint Deployment Process Owner*. They are responsible for determining whether TC-AIMS II fulfills joint mission needs/requirements for deployment, sustainment, redeployment/retrograde operations and support joint software acceptance testing. USJFCOM, as the joint user representative, is the ultimate arbitrator of requirements and will provide decisions and direction to the Program Manager for TC-AIMS II product implementation.

USJFCOM will chair the Joint Requirements Board (JRB). The JRB is comprised of two panels: an action officer board responsible for defining, receiving, reviewing, validating, prioritizing, approving, and tracking functional requirements; and an 0-6/civilian equivalent panel to review, approve, and resolve issues forwarded from the action officer panel. The JRB delivers joint requirements to the JPMO for development and delivery of products for fielding. The JRB, JPMO, and Executive Agent work together throughout development to ensure that an optimal product is delivered within cost and schedule constraints.

2.2.1.10 United States Air Force and United States Navy (USAF and USN).

The USAF and USN provide representation to the JTMB, CMB, and JRO to represent their respective user communities. Each Service is responsible for funding, procuring, and installing their respective hardware needed to operate TC-AIMS II. The USAF and USN provide PM TIS staffing In Accordance With (IAW) the Joint Staffing MOA

2.2.1.11 United States Marine Corps (USMC).

The USMC represents its respective user communities at JTMB, CMB, and JRO sessions. The USMC is responsible for funding, procuring, and installing its hardware needed to operate TC-AIMS II. The USMC provides PM TIS staffing IAW the Joint Staffing MOA.

2.2.1.12 Marine Corps Operational Test and Evaluation Activity (MCOTEA).

MCOTEA will act as a supporting OTA to the lead OTA, i.e., ATEC. MCOTEA will conduct the USMC IOT on TC-AIMS II Block 2, and provide its T&E results to ATEC for inclusion in the final TC-AIMS II SER prior to a milestone decision for the USMC. MCOTEA signs the Operational Test Activity Concurrence page.

2.2.2 Working-Level Integrated Product Team (WIPTs).

The PM TIS office initially established WIPTs in the areas of Test and Evaluation, Cost, Integrated Logistics Support, Security, Communications, Requirements, and Technical to act as advisory bodies to the PM; and as direct communications between the program office, and oversight and review process. The WIPT concept calls for empowerment of representatives to speak for his/her respective organization on matters pertinent to the purpose of the WIPT.

WIPTs are chaired by the TC-AIMS II PM or designated representative. Each Component is represented on each WIPT. Other program participants may be represented at one or more of the WIPTs within their organization's area of responsibility or oversight. OSD staff activities, Joint Staff activities, Defense Information Systems Agency (DISA) and the Component activities may be represented on one or more WIPTs as appropriate.

2.2.2.1 Test and Evaluation WIPT.

The Test and Evaluation WIPT focuses on the TEMP to develop strategies, plans, review progress, tailor/update the TEMP in support of Milestone reviews, and resolve or elevate issues.

PART III – DEVELOPMENTAL TEST AND EVALUATION OUTLINE

3.1 Developmental Test And Evaluation (DT&E) Overview.

The Program Manager, Transportation Information Systems (PM TIS) will produce and implement a developmental test plan that ensures all technical and functional requirements have been properly developed to support Services deployment mission. The plan will be developed in accordance with the System Evaluation Plan (SEP). Test results and required data will be made available to the independent evaluator. The United States Army Test and Evaluation Command (ATEC) will develop and conduct the independent evaluation of TC-AIMS II. This evaluation supports decision-makers by providing data needed to verify functional maturity of TC-AIMS II software and determine readiness for Operational Test and Evaluation (OT&E). The ATEC evaluation planning process introduces an integrated test and evaluation strategy that establishes a linkage between developmental and operational testing and evaluation.

The primary goal of DT&E is to ensure that when TC-AIMS II exits Development Test (DT), there will be maximum assurance that the system is ready to proceed into an operational test. DT&E will be closely integrated with the OT&E effort. This integration will be achieved by testing and evaluating system effectiveness, suitability, and survivability during DT events. System achievement of key performance parameters (KPPs) will be tested and evaluated during the DT. However, the primary emphasis will be on system capability to adequately address operational issues and criteria based on system functional requirements.

The focus of TC-AIMS II DT will be based on measuring and assessing system capability to perform the Critical Mission Functions (CMF) of the transportation planning, coordination, and execution deployment business process. DT events will be conducted in a laboratory environment but will closely follow the structure of an operational test. The primary event drivers will be Service functional scenarios that require the system to perform part or all of the 16 CMFs (Tables 3-1 and 4-1) of the deployment business process.

An Initial Operational Test (IOT) was conducted on the TC-AIMS II Block 1 system in November-December of 2001. Due to several system deficiencies identified in the operational test the PM TIS implemented a combination of software, documentation, and training changes to the TC-AIMS II system. In May-August of 2002, a Continuous Evaluation (CE) Re-Look was conducted for the US Navy, and for the US Army in USAREUR and FORSCOM. In July 02, the ASD(C3I), Information Technology Overarching Integrated Process Team (IT-OIPT) approved full fielding within the U.S. Army Europe (USAREUR) and the Navy. On 4 November 2002, the Acquisition Decision Memorandum approved full fielding of TC-AIMS II to all Army and Navy units.

3.1.1 Block 1 Developmental Test (DT).

Developmental test (DT) addressed system performance, technical and functional characteristics (hardware, software, interfaces, and communications) and was accomplished through developer and government testing to ensure that all capabilities and requirements of the system were exercised and analyzed. Continuous Evaluation (CE) served to evaluate and document the effectiveness of development process(es) for the system, terminating in an evaluation of the TC-AIMS II system. The CE process included, but was not limited to: evaluation of developer quality assurance (QA) and configuration management (CM) activities; implementation of defined system requirements; developmental tests conducted by the Government, developer, and other parties based on test results and other data collection methodologies. Process evaluations determined the effectiveness of developer QA and CM activities as they related to system development. Testing gathered data relative to the performance of the software, hardware, interfaces, and communications capabilities of the system. Final evaluation addressed the effectiveness of the development process and the ability of the system to support the user in performing mission-essential activities.

The Block 1 Developmental Test activities included a Software Development Test conducted by the contractor, a Software Qualification Test conducted by the PM TIS, and a Continuous Evaluation by the Independent Evaluator. (Note: In Block 1, testing the terms Software Development Test and Software Qualification Test were used in opposite context of the DA-PAM 73-7. The Block 1 SDT was the test process defined as SQT and likewise, the Block 1 SQT was the test process defined as SDT).

3.1.2 Block 2 Software Qualification Test (SQT).

The developer executes technical test procedures and functional test scenarios on target hardware to authenticate compliance with all applicable system requirements. This test shows the acquirer the system's ability to meet its system requirements by demonstrating the behavior of the system in a simulated operating environment. In preparation for the SQT the TC-AIMS II developer conducts incremental build tests on the developer's test suite using benchmark test files. The developer tests are the following:

- Unit Test (UT). The unit test validates requirements expressed in the detailed design descriptions and software requirement specifications. In addition, unit testing ensures that all source statements in a unit have been executed.

- Integration and Test (I&T). The objective of this activity is to integrate two or more functional threads from the bottom-up and to test that the composite software works as intended without adverse affects. All integrated functional threads should accept valid inputs and produce correct outputs as specified for the associated sub function(s). This process will continue until all units have been integrated into a delivered suite of software.

3.1.3 Block 2 Software Development Test (SDT).

The SDT is a system test conducted by the PM TIS in direct support of the ATEC evaluation team. Realistic data files supplemented with user prepared data will be executed on target hardware. Conversion procedures and special training requirements will be introduced as additional elements for verification and validation. The objectives of the SDT are to obtain Government confirmation that the design will meet technical performance and operational requirements and to determine the adequacy and timeliness of any corrective action indicated by previous testing. System users will participate in the technical and functional aspects of the SDT. Hardware, software, communications, conversion processes, interfaces, and interoperability requirements comprising the total system will be validated.

3.1.4 Continuous Evaluation Activities (CE).

The CE concept addresses viability of established processes, adherence to these processes, and requirements traceability based on developmental tests performed by the software developer and the Government.

The ATEC Evaluation Team will monitor appropriate levels of regression testing, assess configuration management procedures, and review revisions to test scenarios, procedures, and data based on test results requiring changes to software. The ATEC Evaluation Team will provide interim evaluations to the Director, AEC-ITED and as directed to the T&E community.

3.1.5 Developmental Test Readiness Review (DTRR).

Entry Criteria. PM TIS will conduct a DTRR prior to the start of DT. During the DTRR, all activities and requirements that might impact the successful execution of the test are reviewed to determine whether the next level of testing can begin. The Test and Evaluation regulations provide specific guidance for beginning a formal DT. These entry criteria require that:

1. Evidence of successful completion of the contractor's software and system qualification tests.
2. An approved TEMP exists that has been updated to reflect the developmental test.
3. The software provided for test has been identified with name and version identifiers and has been QA certified.
4. A safety assessment report has been provided to the test organization.
5. A DTRR has been held and the developmental test readiness statement indicates the testing may proceed.
6. Problems detected during previous testing which will have impact on a successful developmental test have been closed, or approval to waive or defer tests for those conditions has been received from the TEMP approval authority.
7. System documentation regarding software operation is in near final form.

Exit Criteria. The Test and Evaluation regulations provide specific guidance for successfully exiting DT. These exit criteria require that:

1. No known Category 1 or 2 (Critical) problem reports are open. As defined by DA PAM 73-7, Table 2.6, IEEE12207.2-1997, Annex J, Figure J.2, and IEEE 1044.1-1995, A-16).
2. Category 3 (Medium) problems must be documented and trained (and have a Joint approved work around) with appropriate impact analyses completed and reviewed by functional proponent, the DT&E and OT&E communities. As defined by DA PAM 73-7, Table 2.6, IEEE 12207.2-1997, Annex J, Figure J.2, and IEEE 1044.1-1995, A-16).
3. A successful independent government test documented to certified performance and functional requirements.
4. Certification of Software Stability, Depth and Breadth of Testing (functional and performance requirements) to include an impact analysis on software shortfalls.
5. The DT delivers a frozen version of software to the operational test community. The operational test community ensures that it is the version loaded at the operational test site.
6. Verification of successful data conversion and load.

3.2. Future Developmental Test and Evaluation.

DT&E will be linked to the TC-AIMS II incremental acquisition strategy. Each developmental increment will undergo a Government Developmental Test. The specific scope of Developmental Testing shall be based on the DA PAM 73-7, "Software Test and Evaluation Guidelines", July 1997. The functional, hardware, and communication configurations; test scenarios and events; evaluation scope; test limitations; and DT&E objectives for developmental test for Block 2 are described in Table 3-1 below.

Table 3- 1 Developmental Test and Evaluation of TC-AIMS II

	TC-AIMS II Block 1 – Basic Unit Move	**TC-AIMS II Block 2 – Enhanced Unit Move**
Functional Configuration	13 of 16 Critical Mission Functions – Maintain Equipment List – Maintain Personnel List – Build Unit Deployment List – Create Movement Plans – Create Convoy Plan – Label Unit Cargo – Document Hazardous Cargo – Containerize/Palletize Cargo – Schedule Movement – Coordinate Movement – Select Mode and Carrier – Print Movement Documents Transmit In-Transit Visibility Data Supporting interfaces (22)	13 of 16 Critical Mission Functions – Maintain Equipment List – Maintain Personnel List – Build Unit Deployment List – Create Movement Plans – Create Convoy Plan – Label Shipment Unit – Document Hazardous Cargo – Containerize/Palletize Cargo – Schedule Movement – Coordinate Movement – Select Mode and Carrier – Print Movement Documents – Transmit In-Transit Visibility Data Supporting Interfaces (18) Smart Card (CAC) Improved Reports and Query
Hardware Configuration	Garrison Deployed Standalone PC or laptop	Regional/Deployed Standalone PC or laptop Enterprise Management System
Communication Configuration	TCP-IP Thick Client File Attachments (FTP & SMTP) Removable Media Data Transfer	Web Browser access to the application TCP-IP Thick Client File Attachments (FTP & SMTP) Removable Media Data Transfer
DT&CE Objectives	70% Test focus on Critical Mission Function accomplishment Functional Effectiveness Functional Suitability Survivability 30 % Focus on Technical Design Security DII/COE and JTA Compliance Interoperability	Measure Technical Performance changes from Block 1 Bandwidth Utilization Functional Effectiveness No loss in Block 1 functionality Functional Suitability Survivability Security DII/COE and JTA Compliance Interoperability
Test Scenarios & Events	Service Approved Deployment Scenarios accounting for 13 CMFs Lab Environment	Service Approved Deployments Scenarios Accounting for 13 CMFs Lab Environment
Evaluation Scope	COICs Additional Issues KPPs (CTPs)	COICs Additional Issues KPPs (CTPs)
Test Limitations	None.	None

3.2.1 Configuration Description.

TC-AIMS II is being developed as an integrated, deployment information management system. Communication interfaces and protocols will be integral to TC-AIMS II so that external transmissions will be initiated from within the application functions. The equipment specification, type, and configuration will be made up of target COTS hardware. The formal Government tests will consist of all system hardware and software configuration items required to provide the TC-AIMS II core functionality and be tailored to the specific workload and functional requirements of the participating unit.

3.2.2 Developmental Test and Evaluation Objectives.

The formal Government testing must validate the Critical Technical Parameters (CTPs) outlined in Attachment 5 of this TEMP, in the context of performing the Critical Operational Issues and Criteria (COIC) in Attachment 4. The DT identifies functional as well as technological design risks, in making a determination of the system's readiness to proceed to operational testing. For the DT to support the continuous test and evaluation strategy, the integrity of the Test Results database must be maintained. The DT results confirm that the Critical Mission Functions (CMFs) as well as the technical requirements have been met. The Government test team personnel will accomplish this by ensuring that the system capabilities and the functional performance of the system are exercised, verified, and validated. Full system testing will be conducted to validate system performance, accuracy and validity, security, functionality, and interoperability. Additional objectives are to validate system regulatory compliance, system products, and training.

3.2.3 DT&E Events, Scope of Testing, and Basic Scenarios.

TC-AIMS II will be developed, tested, and evaluated incrementally by build as they are completed. Because of the incremental development process, there will be a continuum of testing. Contract developer testing will be conducted at the software development and integration facility. The government will leverage results from the contractors unit, integration, and system test activities as input into the DT. The contractor will demonstrate that all the requirements defined in the system specifications have been built into TC-AIMS II, that it properly executes the business processes, and satisfies the user/proponent needs. The DT process will ensure that all capabilities and requirements of the system are exercised and analyzed IAW applicable regulations.

The contractor's test methodology will be a Test-Analyze-Fix-Test process and include the activities as specified in the software test plans. The operators will perform tasks in accordance with the test procedures, record correct performance, and document failures and problems. A successful Test Readiness Review (TRR) will be conducted and documented prior to each developer test and formal government test.

TC-AIMS II will undergo continuous evaluation during the developmental phase, focused on the final Block 2 release. This is a phased approach wherein each of the services will establish baseline test scenarios supporting their core deployment mission area "unit movement" business processes. The PM TIS will conduct detailed tests on the system interfaces, database performance, interoperability, as well as confirming DII/COE and JTA compliance. These tests will be conducted as each incremental build is released. Test procedures will continue to evolve throughout the development process to reflect new system capability and functionality. In preparation for the formal DT the ATEC AST will activate the Data Authentication Group (DAG). During Developmental Test and Evaluation the DAG is chaired by the lead Developmental Evaluator. PM TIS, JFCOM, and the participating Services are represented on the DAG and have a vote on scoring and data authentication. The specifics for the conduct of DAG during the DT are provided in the Performance Scoring Criteria (PSC) for the TC-AIMS II system. This document will be coordinated with the DAG approximately two weeks prior to official start of testing.

This TEMP will be updated to reflect follow-on testing as each Block is defined through a formal process monitored by the CMB and placed into development by the PM TIS. It is incumbent upon the PM TIS to identify and provide technical specifications for new functionality "system requirements" to be introduced in each Block.

3.2.3.1 DT Events and CE Activities.

The government conducts a DT with a mix of PM TIS Subject Matter Experts and real-world users executing test procedures and scenarios on target hardware and a frozen version of software in accordance with the DT Event Design Plans. The Event Design Plan and test scenarios are designed to validate all the performance, technical, and functional requirements This is to ensure the ability of the system to support the user in performing Critical Mission Functions. Functional testing is executed on target hardware to focus on the behavior of the system in a simulated operating environment.

Test outcomes are analyzed, software revised as appropriate, and regression testing executed. All test results will be recorded in the problem report repository (PVCS Tracker). Final analysis of the test results is provided in a formal Test Report. This report shall be submitted to the Operation Test Readiness Review Certification Authority, DD, DT&E/S&TS, and DOT&E 60 days prior to the operational test. The ATEC Evaluation team will provide a final review to ensure the Test Plan and test scenarios is adequate to verify system CMFs. The ATEC Evaluation Team addresses appropriate levels of regression testing, configuration management, and revisions to test scenarios, procedures, and data based on test results requiring changes to software. The ATEC Evaluation Team provides interim evaluations to the Director AEC-ITED and as directed to the T&E community. ATEC monitors the progress of system level testing, assesses test data and results, and coordinates with the JPMO concerning readiness for formal government test.

The DT is designed to demonstrate that TC-AIMS II (software, interfaces, and communications) satisfies all functional and performance requirements. The DT employs

various test methods to collect data on performance, reliability, accuracy, communications capabilities, and system design. The qualification methods employed are:

- Inspection: verification by visual examination
- Analysis: verification by technical, mathematical, or analytical evaluation
- Demonstration: verification of operation of the item under a specific condition
- Test: verification through systematically exercising the applicable item under appropriate conditions with instrumentation and collection, analysis, and evaluation of quantitative and qualitative metrics.

The DT will be conducted at the PM TIS Software Development Facility (SDF) using a configuration that emulates real-world operational sites. Real-world users follow test procedures and scenarios designed to execute business practices validating the system's design using real world data. During this process, the real-world users conduct simulated tasks of day-to-day operations. If all expected outcomes are generated, then the business practices are validated. However, if an output is incorrect, an incident report is generated. The incident report provides the PM TIS, user representatives, developer, and developmental and operational evaluation community with a description of the problem, effect on the user, and recommends solutions to the problem. All incidents are reviewed to determine if a problem exists that degrades system performance as designed or whether the incident is an enhancement to the configured system. The business practice with an associated problem report is re-tested to ensure the problem is corrected. Additionally, all interdependent business practices are re-tested to ensure the software fix did not create a new problem.

3.2.4 Limitations.

None.

PART IV -- OPERATIONAL TEST AND EVALUATION OUTLINE

4.1 Operational Test And Evaluation Overview.

The United States Army Test and Evaluation Command (ATEC), as lead Operational Test Agency (OTA), is responsible for the conduct of operational testing (OT) of TC-AIMS II and to perform an integrated system evaluation. ATEC will be supported by the Marine Corps Operational Test and Evaluation Activity (MCOTEA) during the Marine Corps Operational Test. OT will be based on observing live day-to-day operations or command post exercises (CPXs) in which representative users will perform the transportation tasks required to move personnel, cargo, and equipment using TC-AIMS II and Service legacy or manual systems. The Service Components (USN, USA, and USMC) will move battalion/squadron-sized unit(s) in conjunction with a brigade/MEU-sized command post or actual exercise. All required interfaces will be tested including feeder systems and other linkages to JFRG-II, JOPES, and GTN. Scripting will be used only as necessary. System evaluations will focus on the timeliness and accuracy of critical mission functions, reports, and outputs required to accomplish the Unit Deployment planning, coordination, and execution mission.

ATEC, supported by MCOTEA for the USMC OT, will combine data gathered from observations during Continuous Evaluation (CE) events, Developmental Testing (DT), and OT to produce a cost-effective, risk-reducing test and evaluation program for TC-AIMS II. ATEC will participate in the planning and execution of DT in order to reduce the data required during OT for evaluating the TC-AIMS II system. Significant changes to the production configuration during or after DT may invalidate previous test events and data for evaluation purposes. These test events may then have to be repeated during OT to demonstrate production-representative performance. Operational and additional issues addressed for evaluation and reporting will only relate to the functions agreed to be included in that specific TC-AIMS II Block to be tested.

The PM TIS is developing TC-AIMS II using an incremental acquisition strategy with an evolutionary design process. TC-AIMS II Block 1, Basic Unit Move, was developed to perform a majority of the functions shown in Attachment 1 and 13 of the 16 selected critical mission functions (CMF) shown in Table 4-1 below as well as to interface with all legacy systems (see Table 1-1) as agreed to by the PM TIS, the Functional Proponent, and the Services.

Table 4-1 TC-AIMS II Critical Mission Functions

SUPPORT UNIT PLANNING	PREPARE FOR MOVEMENT	EXECUTE MOVEMENT
Maintain Equipment List	Label Shipment Unit	Print Movement Documents
Maintain Personnel List	Document Hazardous Cargo	Transmit ITV Data
Build Unit Deployment List	Containerize/Palletize Cargo	In-Check Arriving Cargo (Block 2 partial)
Create Movement Plans	Schedule Movement	In-Check Arriving Personnel (Block 2 partial)
Create Convoy Plan	Coordinate Movement	Discrepancy Reporting (Block 2 partial)
	Select Mode and Carrier	

An Initial Operational Test (IOT) was conducted on the TC-AIMS II Block 1 system (previously known as Version 3.01, Build 72D) in November-December 2001. The Block 1 system was evaluated as ineffective, unsuitable, and not survivable for fielding to any of the Services. Subsequently, the PM TIS made changes to the Block 1 system software, training and documentation, and Continuous Evaluation (CE) re-looks were conducted for the US Navy at Norfolk, VA in May 2002, and for the US Army at USAREUR in June 2002 and FORSCOM in August 2002. As a result of the improvements made, conditional fielding of the Block 1 system was authorized to the US Navy in July 2002, and to the US Army in October 2002.

Concurrently with the Block 1 re-look efforts, the PM TIS and the TC-AIMS II Joint Requirements Office (JRO) performed a detailed review of the future requirements for system blocks. As a result of DoD/HQDA guidance, a decision was made to web-base the Block 2 TC-AIMS II system. The current design for the Block 2 Enhanced Unit Move system will be to provide users the same Block 1 functionality with limited additional functionality and fixes to Block 1 problems. Block 2 will provide fundamental transportation planning and coordination functions required to support unit movements via the internet using a standard COTS web browser program. Block 2 will be capable of operating on a regionalized server architecture with centralized enterprise management collocated with the first fielded region.

Based on Block 2 information, the ATEC System Team (AST) decided that the Block 1 test and evaluation strategy remained sufficient for the Block 2 system, with minor changes to assess the new Enterprise Management functions and ensure adequate information assurance. ATEC, with MCOTEA support for the USMC OT, will report whether TC-AIMS II is ready to support the decision for each service that wants to field Block 2. CE, DT and OT data will be used to address all required functions and system issues. TC-AIMS II effectiveness will be evaluated based on the system's capability to provide: timely and accurate unit deployment lists; transportation load plans; unit movement plans, requests, and schedules; and create required reports, forms, and labels during movement. In addition, effectiveness will include an evaluation of the capability of TC-AIMS II to provide/receive timely, accurate, and usable information with other automated systems, to support current Service transportation business practices, and to support unit sourcing of Time Phased Force Deployment Data (TPFDD) requirements. In addition, MCOTEA will compare Block 2 performance data to data collected during the Block 1 IOT on USMC legacy system capabilities to exchange data, receive/use AIT input, produce

standard outputs, and perform CMFs. System suitability will be assessed by examining system reliability, availability, and maintainability (RAM), training, MANPRINT, enterprise management and system administration, to include the capability to operate on Service-provided infrastructure. Block 2 survivability will be determined by evaluating security, continuity of operations, along with additional measures to ensure adequate information assurance.

4.1.1 Pre-Test Reporting Requirements.

Before the start of each operational test event, the US Army Operational Test Command (OTC) will conduct a final Operational Test Readiness Review (OTRR) to determine if the system and all test participants are ready for operational testing. At this final OTRR, the following reports or certifications are required:

- TC-AIMS II OT scenarios must be Service approved and reviewed by JFCOM.
- Services will verify business processes were demonstrated during Functional Operations (FUNOPS).
- The PM TIS certifies TC-AIMS II is ready to enter OT and that no Software Priority 1 and Priority 2 problems exist and workarounds are in-place for Priority 3 problems.
- Approved operational and/or system view architectures are available.
- PEO EIS certifies security requirements based on PM TIS security and IA test results have been addressed in accordance with the DoD Information Technology Security Certification and Accreditation Process (DITSCAP).
- The PM TIS provides a safety release and final versions of all test support packages.
- The PM TIS certify that test players in each Service are adequately trained to operate and provide system administration for the TC-AIMS II system during the Block 2 OT.
- Site representatives certify test sites are ready for OT and test unit personnel are trained and committed for the duration of the test, as applicable.
- The test units, with PM TIS assistance, will certify that the database(s) supporting the test are current prior to OT.
- The PM TIS ensures that all TIS military and civilian support personnel involved in the OT have been committed for the duration of the test.
- The PM TIS certifies that TC-AIMS II meets the appropriate level of DII/COE compliance.
- JITC attests that TC-AIMS II conforms to applicable standards preparatory to interoperability test certification in accordance with CJCSI 6212.01B.

4.2 Critical Operational Issues and Additional Issues.

4.2.1 Critical Operational Issues and Criteria (COIC).

A summary of the COIC to evaluate TC-AIMS II Block 2 is contained in Table 4-2 below. The full COIC text is contained in Attachment 4 of this TEMP.

Table 4-2 TC-AIMS II Critical Operational Issues

Issue	Scope	Criteria
Security (COI 1). Does TC-AIMS II provide and maintain a level of security consistent with current regulations and policies?	• This issue examines the ability of TC-AIMS II to protect data from unauthorized disclosure and meet the requirements of applicable security policies and directives.	• TC-AIMS II will prevent unauthorized disclosure of data (ref. MNS, Para 4, and ORD, Para 2)). • TC-AIMS II will limit a user's access to only those areas for which they have been given permission (Ref. MNS, Para 4)). • TC-AIMS II will protect data in accordance with the highest classification of data accessible (Ref. ORD, Para 5e(2)).
Performance (COI 2). Can TC-AIMS II support Joint and Service-specific business processes in the areas of planning, directing, coordinating, and executing the rapid deployment and redeployment of unit movements, traffic management operations including distribution and sustainment activities, and provide accurate and timely data to other related C2, transportation, and planning organizations?	• This issue examines the ability of TC-AIMS II to provide deploying forces with the ability to efficiently plan, coordinate, and execute all of the unit level activities necessary to move units, and to provide the CINCs and Joint Staff, and supporting establishment with timely and accurate movement information during force deployments. • This issue examines whether TC-AIMS II can process the information it receives accurately in order for a user to perform cargo and personnel sourcing for force requirements, manage unit deployment information, conduct load planning, manage organic ground transportation fleets, coordinate non-organic transportation requirements, and produce necessary reports, labels, forms, and write to AIT devices, to accomplish transportation deployment functions.	• TC-AIMS II must be capable of providing timely and accurate critical source data to GTN and feed JOPES through appropriate feeder systems (Ref. ORD, Para 1d(1)) and (Ref. ORD, critical KPP time and accuracy guidelines delineated in 4.) • TC-AIMS II must produce standard labels, tags, forms, and reports needed to accomplish transportation and deployment functions within timeframes set forth in the ORD. (Ref. ORD, Para 4a(2)(c)).
Interoperability (COI 3). Can TC-AIMS II exchange data with appropriate Joint, Service-unique, and commercial transportation systems and Automatic Identification Technology (AIT) devices? In addition, is TC-AIMS II interoperable with Services' current infrastructure and deployed/tactical data networks?	• This issue examines TC-AIMS II's ability to exchange and share data with Joint and Service-unique supply, transportation, materiel, personnel, finance, TPFDD Feeder systems, Command and Control (C2), and commercial systems as specified in the ORD for the purposes of reducing or eliminating manual data input. • This issue examines whether TC-AIMS II is interoperable with AIT devices and the device's software to support accurate and timely data capture. • This issue examines whether TC-AIMS II is interoperable with the deployable tactical and shipboard data networks, and with the in-place infrastructure at Services' posts, , camps, and stations.	• TC-AIMS II must accept and export properly formatted data from and to appropriate systems in accordance with System Interface Agreements (Ref. ORD, Para 1.a, Para 4a(2)(a)(1) and Para 4a(2)(b)(1), and 4.b.5). • TC-AIMS II must be able to receive and use input from peripheral AIT devices (Ref. ORD, Para 4a(2)(a)(2)). • TC-AIMS II must operate on existing information infrastructure networks, deployable tactical and shipboard data networks or in a stand-alone mode, for occasions where robust communications are not available (Ref. ORD, Para 4a(1)(c).
Supportability and Maintainability (COI 4).[1] Is TC-AIMS II supportable, maintainable, and trainable during continuous operations, in a variety of environments and configurations?	• This issue examines whether TC-AIMS II can operate effectively in various environments in a client-server, deployed client-server, and stand-alone environment. • This issue examines the intuitiveness of the system design, and whether functionally competent users who have had system training, or through on-line help or system tutorials/computer based training on TC-AIMS II can effectively use the application to support traffic management and unit moves operations. • This issue looks at whether system administrators/database administrators can effectively maintain the system after receiving TC-AIMS II training. • This issue looks at whether the system can continue to operate during daily system administrator/database	• TC-AIMS II must be operable in both garrison and deployed field operational environments, to include client-server, deployed client-server, and stand-alone modes (Ref. ORD, Para 1d(1) and 4a(1)(a)). • TC-AIMS II must be able to be operated by trained users (Ref. ORD, Para 4, Personnel Selection and Training Objective). • TC-AIMS II must be logistically supportable IAW Service policy (Ref. ORD, para4, Logistics Supportability Objective.) • Routine system server maintenance will not preclude normal user operations (Ref. ORD, Para 4a(1)(a)). • TC-AIMS II will provide an intuitive and easy-to-use system (Ref. ORD, Para 4a(2)(b)(1) and Para 5a(d)(2)). • Provide effective training support that addresses operator, system administration, and system maintenance training, and that

	administrator duties, such as a system backup and network, operating system, or database utilities.	enhances the user's ability to learn and use TC-aims II. Primary method of training to be provided is a CD-ROM based multimedia package. The CD-ROM package must satisfy the requirements for extension, sustainment, collective, and instructor/key personnel training for a UMO operator course, ITO/TMO operator course, supervisor/managers course, system/database administrator course, doctrine and tactics course and system support course (Ref, ORD, paragraph 5d(3).

[1] Reliability, Availability, and Maintainability (RAM), Manpower and Personnel Integration (MANPRINT), Integrated Logistics Supportability (ILS), and Enterprise Management/System Administration will be evaluated as separate identifiable criteria under COI 4 (Supportability/Maintainability).

4.2.2 Additional Issues (AIs).

In addition to the COICs from the Functional Proponent, the ATEC System Team (AST) has developed the following AIs to ensure a comprehensive operational evaluation is provided to the Milestone Decision Authority (MDA). AI 1 (Business Practices and Workarounds), AI 2 (Movement Success), and AI 3 (USMC Legacy System Comparison) are operational effectiveness issues. AI 4 (COOP (Continuity of Operations)) and AI 5 (Information Assurance) are operational survivability issues. The AIs will be used to identify information that the MDA will likely need to consider before fielding the system. The AIs are included in Table 4-3 on the following page.

Table 4-3 TC-AIMS II Additional Issues

Name	Issue
Business Practices and Workarounds (AI 1)	Does TC-AIMS II support the standard business practices of each Service to include standard procedures and regulations, and do workaround procedures facilitate critical mission function (CMF) accomplishment?
Movement Success (AI 2)	Does the TC-AIMS II system contribute to the overall transportation mission by assisting users in completing movements of personnel, equipment and cargo?
USMC Legacy System Comparison (AI 3)	Does TC-AIMS II demonstrate functionality that equals or exceeds USMC Service legacy system functionality (i.e., MDSS II Version 6.1, TC-AIMS/MC)?
Continuity of Operations (COOP) (AI 4)	Are the TC-AIMS II System functions and SOPs for local data base backup, alternate site data backup and restoration of operations adequate for continued user accomplishment of critical mission functions?
Information Assurance (AI 5)	Does TC-AIMS II have appropriate safeguards to prevent penetration of the system, to protect its data from unauthorized change or corruption, and to preserve its operational capability as required?

4.3 Future Operational Test and Evaluation.

Future TC-AIMS II acquisition blocks will add functionality and interfaces as determined by the PM TIS and the TC-AIMS II JRO until Full Operational Capability is achieved. ATEC plans to support the decisions to field future blocks of TC-AIMS II by using data from contractor testing, government Development Test evaluated by the Independent Developmental Evaluator, and an operational test on each block. The level of operational test for each block will be determined by applying the provisions of DOT&E memo, *Guidelines for Conducting Operational Test and Evaluation for Software-intensive System Increments,* dated 10 October 1996. A risk assessment will be conducted in accordance with the DOT&E memo to determine the level of operational testing required for each system block. This determination will be made as soon as the JRO/PM TIS provide details on the functionality to be contained in each of the follow-on blocks. Subsequent OT events will focus on the new functions added by that increment with adequate regression testing to ensure that all previous functions continue to work.

DOT&E Guidance requires that the system configuration, operational test and evaluation objectives, events, scope of testing, scenarios, and test limitations for all future phases of operational testing of a system be described. For ease of readability and to facilitate communication and coordination among all members of the acquisition team, these required subjects are presented in a tabular format as shown in Table 4-4 on the following page and discussed the following sub-paragraphs. The separate operational test events for Block 1/Block 2 and future Blocks are the column headings for the table. Then, each of the areas required by DOT&E Guidance can be found in its own row. This enables the reader to quickly assess the similarities and differences between the OT events.

Table 4-4 Operational Test and Evaluation of TC-AIMS II

	Block 1/Block 2 Basic/Enhanced Unit Move Incremental Strategy	**Future Planned Blocks 3 thru 5** Evolutionary Strategy
Functional Configuration	• Provides most of these 13 of 16 Critical Mission Functions – Maintain equipment list – Maintain personnel list – Build unit deployment list – Create movement plans – Create convoy plan – Label unit cargo – Document hazardous cargo – Containerize/palletize cargo – Schedule movement – Coordinate movement – Select mode and carrier – Print movement documents – Transmit In-Transit Visibility data – In-check arriving cargo) [Block 2 partial] – In-check arriving personnel [Block 2 partial] – Discrepancy reporting [Block 2 partial] • Unit level sourcing of TPFDD requirements • Provides selected interfaces	• Will include all 16 CMFs and additional functionality as determined by Joint Requirements Office and approved by Configuration Management Board: • Block 3 – Movement Control and Planning with Map Graphics • Block 4 – Maritime Prepositioned Forces and Theater Operations • Block 5 – Installation Transportation Office/Transportation Management Office (ITO/TMO)
Hardware Configuration	• Garrison LAN • Internet based via Web browser • Deployed LAN • Standalone PC or laptop	• To be determined by Joint Requirements Office and approved by Configuration Management Board
Communication Configuration	• Internet • Commercial/Defense Information Systems Network (DISN) • Tactical communications • Floppy disk	• To be determined by Joint Requirements Office and approved by Configuration Management Board
OT & E Objective	• OT assesses operational effectiveness, suitability & survivability to support MDA decision to field to all Services and to develop future system blocks	• TBD by use of risk assessment methodology of the DOT&E memo *Guidelines for Conducting Operational Test and Evaluation for Software-intensive System Increments,* dated 10/10/96, approved by the T&E WIPT
Test Scenarios & Events	• Use live, day-to-day operations or CPX • Scripted scenarios used only as required[1] • One test site from each Service with a Battalion or squadron-sized unit moving as part of a brigade or MEU-sized CPX or actual exercise • One or more Unified Command participants[2] • All required interfaces and feeder systems will be tested • Actual users as stated in the target audience description • USMC will compare legacy systems performance to TC-AIMS II	• To be determined by application of the risk assessment methodology of the DOT&E memo *Guidelines for Conducting Operational Test and Evaluation for Software-intensive System Increments,* dated 10 October 1996 and approved by the Test and Evaluation WIPT
Evaluation Scope	• All COICs and AIs will be evaluated for all required functions • MCOTEA evaluates AI 3 on USMC legacy system comparison • Block 2 evaluation will also include Enterprise Management and Information Assurance	• TBD by use of risk assessment methodology of the DOT&E memo *Guidelines for Conducting Operational Test and Evaluation for Software-intensive System Increments,* dated 10/10/96, approved by the T&E WIPT.
Test Limitations	• None (live operations may not stimulate large sample sizes of all functions)	• To be determined

[1] Field operations, use of tactical power generation, tactical communications, shipboard operations, execution (vice planning) of sea transport, and Reserve/National Guard participation are the test events that most likely will need to be scripted. This is based on the low probability of their occurrence during any selected 30-day operational test window.

[2] Evaluation of JOPES and GTN interoperability will require some level of participation of members of one or more of the Unified Commands.

4.3.1 Configuration Descriptions.

The hardware configuration of TC-AIMS Block 2 consists of Service-provided common hardware/software (COTS) computers which will either host the TC-AIMS II application for use by Service operators as stand-alone or in a deployed network, or provide a standard web browser connected through local area networks (LANs) and the internet to the regional TC-AIMS II web-based server to provide enhanced unit move functions to users in garrison or on installations. Similar hardware configurations are currently envisioned for future TC-AIMS II blocks.

Communication configurations to support TC-AIMS II Block 2 information exchanges include floppy disk transfer of information, file transfer protocol (FTP) via commercial and defense information systems network (DISN), or TCP/IP protocols for internet communication programs. Similar communications will be used to support future blocks, and the use of selected Service tactical communication systems will be incorporated.

The system functional configuration for TC-AIMS Block 2 will provide enhanced unit move functionality for 13 of the 16 identified CMFs, interface with the systems listed in Table 1-1 of the TEMP, and provide the capability for Services to resource the first seven days of the TPFDD requirements. The Block 2 software development will be frozen and brought under configuration management control of OTC at the end of Block 2 DT, prior to OT Training. Future system blocks will incorporate the remaining CMFs along with new functionality required for movement control and planning, graphical maps, theater operations and Maritime Pre-positioned Forces (MPF), and ITO/TMO functions as currently envisioned for each increment.

4.3.2 Operational Test and Evaluation Objectives.

The OT&E objective for TC-AIMS II Block 2 OT is for ATEC to assess the overall system effectiveness, suitability and survivability by providing input to the MDA for the Full Scale Production Review (FSPDR decision). Each COIC and AI will be evaluated during Block 2 OT; however, several issues may be limited as a result of the specific functionality being provided. One example, listed above, is that 3 of the 16 CMFs will only be partially available in the Block 2 system for evaluation. Overall system performance is limited to the enhanced unit move functions contained in Block 2, with additional functions addressed in future blocks as developed. Further, interoperability for Block 2 is limited to interfaces with the systems specified in Table 1-1, with additional interfaces being provided in future versions. Currently, the OT&E Objective for each future block will be determined using the risk assessment methodology in the DOT&E memo and approved by the T&E WIPT.

4.3.3 Operational Test and Evaluation Events, Scope of Testing, and Scenarios.

The Block 2 OT will consist of collecting data during live day-to-day operations or CPXs in which representative users (operators, maintainers and system administrators) at each of the Service test sites will use TC-AIMS II and Service legacy or manual systems to perform the transportation tasks required to support their business processes for unit deployments.

JFCOM and the Services will provide ATEC a realistic joint deployment scenario focused on the movement of a nominal battalion/squadron/MEU-sized force with support elements, which will require TC-AIMS II users to perform their requisite duties using Block 2. Where possible, the OT scenario will incorporate an actual unit movement (i.e., battalion or squadron) within the context of the larger force deployment scenario. In addition, the Joint scenario will require TC-AIMS II users to resource TPFDD requirements to JOPES through JFRG II, provide ITV data to GTN and interface with the other systems as required.

(a) ATEC and MCOTEA will coordinate to ensure the Block 2 OT Joint deployment scenario maintains comparability to USMC legacy system (Version 6.1) baseline data collected during the IOT. This will support the comparison of TC-AIMS II system performance for exchanging data, receiving and using AIT input, producing standard outputs, and performing CMFs to address AI 3 without having to repeat the legacy system testing.

Logistical support for the system during Block 2 OT will be provided as specified in the TC-AIMS II Integrated Logistics Support Plan (ILSP) annex for each Service, with TC-AIMS II software support being provided by the three-tier system addressed in the basic ILSP, along with the new Enterprise Management functions under contract support.

The System User Manual (SUM), System Guides and other system documentation, as provided by the PM TIS during Block 2 fielding/training, will be assessed during the OT. Additional sources of data to be used for the final evaluation of the TC-AIMS II Block 2 system include: test data and evaluation input provided by the IDE from Block 2 DT; observations and assessments conducted during CE events, such as visits to Service Beta Sites, observing site installation and setup, to include initial data conversion from legacy systems or TC-AIMS II Block 1, and support of a Joint Forces Command (JFCOM) exercise, if resourced and conducted. No modeling or simulation is planned for use.

4.3.4 Limitations.

There are no known limitations on the evaluation of the TC-AIMS II Block 2 system. Data to adequately address each measure, criterion and issue is planned to be collected, to include MCOTEA data and evaluation input, to support the final Block 2 Test Report and System Evaluation Report required by ATEC.

4.3.5 Evaluation Strategy.

The evaluation strategy for TC-AIMS II Block 2 is contained in the following subparagraphs and the evaluation dendritics provided in Figures 4-1 through 4-3 below. The scope of test and evaluation for future blocks will be determined by applying the risk assessment methodology in the DOT&E memo, *Guidelines for Conducting Operational Test and Evaluation for Software-intensive System Increments,* dated 10 October 1996.

4.4 System Effectiveness.

The evaluation dendrite to evaluate Block 2 system effectiveness is contained in figure 4-1 on the following page. ATEC has developed a robust set of evaluation measures that will allow objective and subjective data to be collected for analytical comparisons as well as a comparison to the best of breed in order to support all Service and Joint evaluation needs. Results of all criterion and related supplementary/complementary measures will be combined to address the two critical issues and three additional issues. To be operationally effective, TC-AIMS II must satisfy the requirements of mission performance, interoperability, business practices and workarounds, movement success, sourcing unit TPFDD requirements, and AI 3 legacy system comparison (USMC-only). Military judgment will be applied to the analysis of data to answer the question, "Will TC-AIMS II provide timely and accurate information needed for users to plan and execute unit movements to the right place at the right time?" If the conclusion indicates TC-AIMS II Block 2 meets the users' needs for planning, coordinating and executing unit movements and accomplishing transportation missions, the system will be found effective.

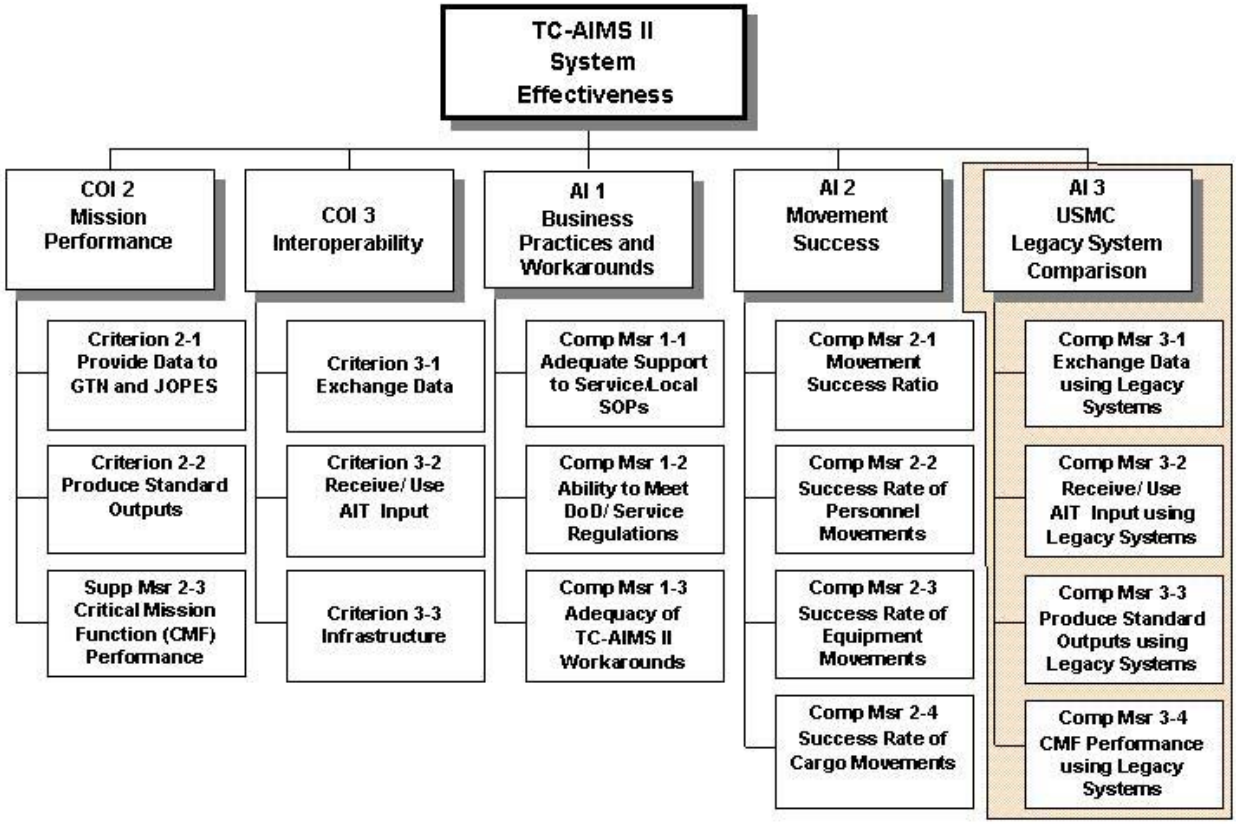

Figure 4-1 TC-AIMS II System Effectiveness

4.5 System Suitability.

The System Suitability evaluation dendrite to be used for TC-AIMS II Block 2 is contained in Figure 4-2 on the following page. Data will be collected on all system suitability measures. Results of all criterion and measures will be combined to address the critical issue. To be operationally suitable, TC-AIMS II must satisfy supportability and maintainability requirements. In addition, the Block 2 system must provide adequate Enterprise Management to establish and maintain the web-based server architecture planned to be fielded, in conjunction with Block 1 functions for system administrators to manage standalone workstations and deployed system networks. Military judgment will be applied to the analysis of all data to answer the question, "Given training, will Soldiers, Sailors, Airmen, Marines, and DoD civilians be able to operate, support, and maintain TC-AIMS II in an operational environment?" If analysis concludes that issues are adequate then TC-AIMS II will be found suitable for operations in the intended environment. Human-System Integration and Block 2 training will be integrated into the evaluation of the MANPRINT issue.

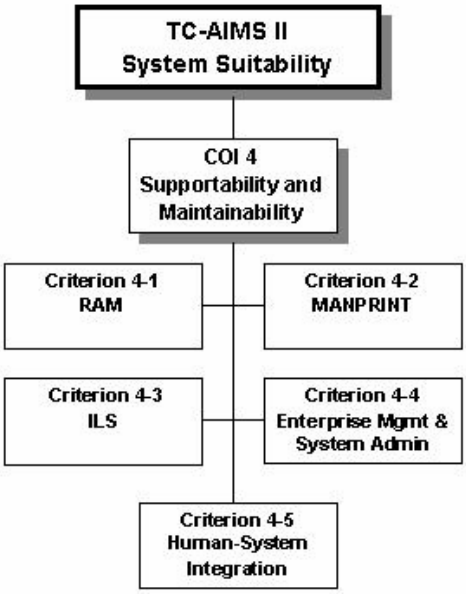

Figure 4-2 TC-AIMS II System Suitability

4.6 System Survivability.

The dendrite to be used for evaluation of TC-AIMS II Block 2 System Survivability is contained in Figure 4-3 on the following page. Data will be collected on all system survivability measures. Results of all complementary measures and criteria will be combined to address the critical issue and two additional issues. To be operationally survivable, TC-AIMS II must satisfy System Security requirements and provide users with Continuity of Operations (COOP) and Information Assurance capabilities to protect system information from unauthorized exploitation and corruption. Assessment of Information Assurance will focus on these five areas: user authentication to prevent unauthorized access; integrity of information to prevent unauthorized modifications; confidentiality to ensure information provided only to authorized users; non-repudiation of information, and; information availability to demonstrate protection from denial of use. Controlled attempts to penetrate the TC-AIMS II system or deny information or use will be conducted during OT to assess the ability of users to implement safeguards. Military judgment will be applied to the analysis of all data to answer the question: "Will the TC-AIMS II system and its users be able to adequately safeguard vital movement information?" If analysis concludes that issues are adequate, then TC-AIMS II will be found survivable.

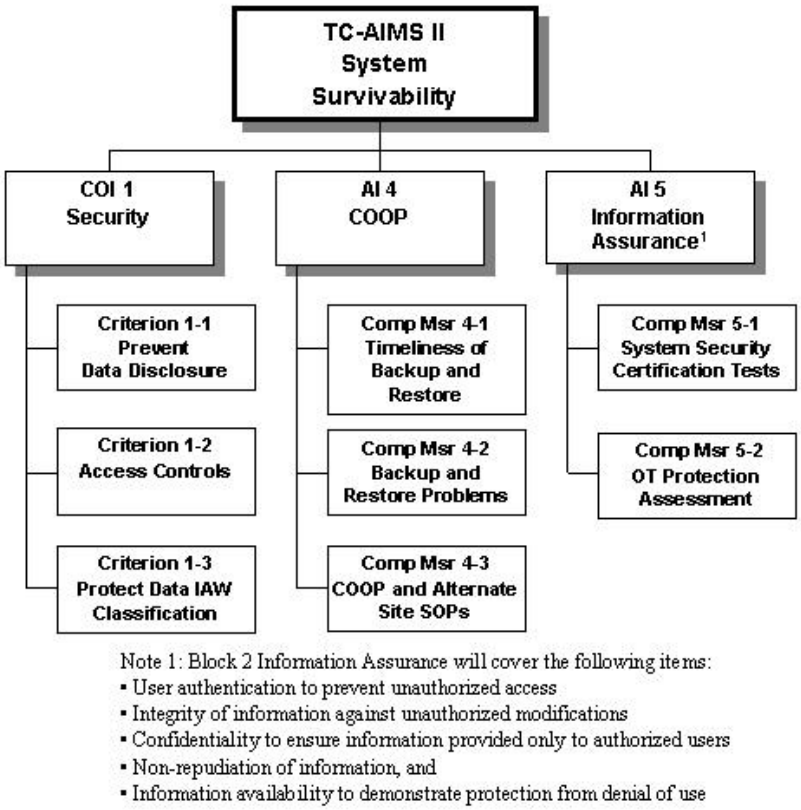

Figure 4-3 TC-AIMS II System Survivability

Interoperability is the condition achieved when information or services can be exchanged directly and satisfactorily between various systems and their users (JCS Pub 1-02). ATEC and the Joint Interoperability Test Command (JITC) will cooperate to produce the information required for JITC to complete the Interoperability Certification (IOPCERT) and ATEC to satisfactorily answer and resolve COI 3 on Interoperability. JITC is the sole DoD certifier for Joint interoperability. JITC will use data collected during DT and OT to complete the Block 2 certification. JITC will assist test organizations in identifying what interoperability testing is required to satisfy joint interoperability certification requirements. PM-TIS will provide JITC and ATEC with information on the technical aspects of the TC-AIMS II interfaces such as: status of interface agreements, status of the technical implementation of those agreements, and supporting opinions on causality if an interface is not effective. ATE will test the effectiveness of information transfer in an operational environment. ATEC will coordinate OT plans with JITC to ensure joint interoperability test requirements will be met. ATEC will provide JITC access to the test database and will share the resulting evaluation of the operational timeliness, accuracy, and usability of information transferred in an operational environment. ATEC will cite the results of the JITC IOPCERT in the system evaluation report. ATEC and JITC will continue to share data and evaluations on all future operational events.

4.6.1 Functional Operations (FUNOPS).

Prior to the start of Block 2 OT, the users at each test site will have a period of two to four weeks to dry run the joint scenario using TC-AIMS II. This period provides the users with an opportunity to combine the TC-AIMS II functionality with that site's standard operating procedures, and to ensure they have a complete understanding of how to best utilize the Block 2 system to accomplish unit movement business processes. By the end of FUNOPS, each test site would have successfully used TC-AIMS II to execute the scenario. In addition, during the installation and setup of TC-AIMS II at each of the OT test sites IAW each Service ILSP, ATEC will observe system administration activities and operations required by users to perform initial conversion of legacy system or Block 1 databases to the TC-AIMS II Block 2 system.

4.6.2 Planning Assumptions and Caveats.

This Test and Evaluation Master Plan is developed based on good faith estimates of the functionality that the PM TIS will incorporate in each block of TC-AIMS II.

4.7 Live Fire Test and Evaluation.

TC-AIMS II does not require live fire test and evaluation under the provisions of Title 10 USC 2366.

PART V -- TEST AND EVALUATION RESOURCE SUMMARY

5.1 Resource Summary.

Key test and evaluation resources, both Government and contractor that will be used during the course of the acquisition program are identified below. See the ATEC Outline Test Plan (OTP) for additional details on test requirements. Primary resource drivers will be these test and evaluation concepts that apply to all Software Development Tests and all operational tests for TC-AIMS II and subsequent Blocks:

Software Development Testing will be based on simulated deployment of a brigade/MEU-sized unit in a lab environment. The lab environment will be configured to represent each Service's fielding plan for TC-AIMS II to support a brigade/MEU-sized unit. Representative users will perform the transportation tasks required to move personnel, cargo, and equipment using TC-AIMS II and Service legacy or manual systems. All required interfaces will be tested to include JFRG-II, JOPES, and GTN. This means that at least one JOPES and JFRG II workstation and one operator must be available to send or receive information during coordinated timeframes within the overall SDT window. Sufficient numbers of workstations, operators, and databases for other required interfaces will also need to be available. (Interoperability is the condition achieved between systems when information or services can be exchanged directly and satisfactorily between them and their users (JCS Pub 1-02).) Required interfaces are listed in Table 1-1 of this TEMP.

Operational Testing will be based on observing live day-to-day operations or scenario-driven command post exercises (CPX's) in which representative users will perform the transportation tasks required to move personnel, cargo, and equipment using TC-AIMS II and Service legacy or manual systems. The Services will move battalion/squadron-sized unit(s) in conjunction with a brigade/MEU-sized command post or actual exercise. All required interfaces will be tested to include JFRG-II, JOPES, and GTN. This means that at least one JOPES and JFRG II workstation and one operator will need to be available to send or receive information during previously coordinated times within the overall test window. Sufficient numbers of workstations, operators, and databases for all other required interfaces, by each Service, will need to be available during coordinated time periods within the overall OT window for that Service to test and evaluate interoperability.

5.1.1 Test Articles.

A listing of TC-AIMS II software functionality for Block 1 is presented in Attachment 1, Block 2 functionality is presented in Attachment 2. Laboratory/Test Hardware/Firmware and Software Configurations are shown in Attachment 6. PM TIS will provide sufficient quantities of Block 2 software at each Service test site for SDT and OT. The specific OT test support requirements and configurations for each of the test sites are provided in the Outline Test Plan (OTP). As noted above, each Service will need to provide a sufficient number of representative TC-AIMS II users to support a brigade/MEU-sized deployment along with one workstation and

one operator for required interfaces as called out in their fielding plans. Table 5-1 below shows projected resources to support the FORSCOM portion of the TC-AIMS II Army OT for these blocks.

Table 5-1 Estimated Resources to Support Army OT

Requirement	Number
Brigade HQ Cell	1
Battalion 1 Cell	1
Company A Cell	1
Company B Cell	1
Company C Cell	1
Battalion 2 Cell	1
Company A Cell	1
Company B Cell	1
Company C Cell	1
Battalion 3 Cell	1
Company A Cell	1
Company B Cell	1
Company C Cell	1
System Administrator	1
Movement Operations Cell	1
Headquarters Operations Cell	1
Required Interfaces Operators and Workstations	See Paragraph 5.a. and Table 1-1

Operational test requirements will vary by Service based upon their unique fielding plan. Army test requirements are intended only to provide planners with a rough order of magnitude resource estimating capability. All configurations will be tested. To accomplish this, garrison (personal computer) and deployed (laptop) hardware will be provided. In addition to the standalone configuration, the networked configuration will be tested. Therefore, enough servers to support each Service fielding plan must be provided.

USN estimates for Block 2 OT are that they will probably use a Construction Battalion (CB) sized force deployment. They estimate that this will require about 12 TC-AIMS II workstations and personnel.

The USMC anticipates that Block 2 OT will take 14 TC-AIMS II workstations with 28 users/data collectors.

These Service resource estimates are preliminary but are sufficient for long range estimations.

5.1.2 Test Sites and Instrumentation.

Each Service will be required to provide one test site. The tentative sites for the TC-AIMS II OT are below.

- **US Army**
  - **Fort Lewis**, is the designated Army OT Test Site. OT is planned in June 2003.
- **US Marine Corps**
  - **Marine Corps Base, Quantico, Virginia,** is the designated Marine Corps OT Test Site. OT is planned during September-October 2003.
- **US Navy**
  - **Amphibious Base, Little Creek, Virginia**, is the designated Navy OT Test Site. OT is planned during May - June 2003.

5.1.3 Test Support Equipment.

Automated test tools will be coordinated with all sites to be used in collection of AIS test data during the OT.

- Operational Test (OT) Data Server (located at OTC, West Fort Hood, TX)
- Automated test tools: See Outline Test Plan (OTP)

5.1.4 Threat Representation.

System security testing and certification will be done primarily by the US Army Information Systems Engineering Command – Information Assurance Security Engineering Directorate (USA ISEC -IASED) during developmental testing (DT). Data will be shared with ATEC and JITC as required. The potential security threats to TC-AIMS II that will be represented during Certification Test include: unauthorized access; fraud and spoofing; service interruption/degradation; and human errors of commission and omission. Refer to TC-AIMS II Certification Plan (ISEC/IASED document).

5.1.5 Test Targets and Expendables.

N/A

5.1.6 Operational Force Test Support.

All required interfaces will be tested including JFRG-II, JOPES, and GTN. This means that at least one workstation and one operator for each required interface for each participating Service will need to be available to send or receive information during previously coordinated times within the overall testing window. The JFRG II workstation provided should generally be the one that represents the first echelon at which TC-AIMS II unit movement data crosses into the operations community from a brigade or MEU-sized move.

5.1.7 Simulations, Models and Test Beds.

None.

5.1.8 Special Requirements.

JPMO will provide the laboratory facilities required in support of all Block 2 Government DT, to include coordination of test players and adequate access to all interfaces required for each Service to be tested. JPMO will coordinate directly with ATEC and JITC to provide on-site access for observations and to DT test data.

The PM TIS Help Desk must be operational as called for in appropriate supporting and fielding plans during all OT periods. Each Service test site must provide nominal LAN connectivity and infrastructure support during the TC-AIMS II OT representative of intended Operational Deployment and use of the TC-AIMS II system as specified in Service fielding plans.

5.1.9 Test and Evaluation Funding Requirements.

Table 5-2, below, shows estimated test and evaluation funding requirements by FY and appropriation line below. Funds are programmed for Blocks 2-5.

Table 5-2 TC-AIMS II Test & Evaluation (T&E) Funding Requirements

TYPE	**FY03**	*FY 04*	*FY 05*	*FY 06*	*FY 07*	*FY08*	*FY 09*
DT/OT							
RDT&E	$1.4M	$1.5M	$1.6M	$1.7M	$1.7M	$1.8M	$1.9M
TOTAL	$1.4M	$1.5M	$1.6M	$1.7M	$1.7M	$1.8M	$1.9M

NOTES: 1. OT includes ATEC-AEC, ATEC-OTC and JITC
2. DT includes the Independent Developmental Tester (IDT) and Independent Test contractor

5.1.10 Manpower/Personnel Training.

Requirements and limitations that effect test and evaluation execution are derived from Integrated Logistics System (ILS) training schedules, Joint and Service System Training Plans (STRAPs), test site Memoranda of Understanding (MOUs), and test site surveys with identified test units.

5.2 Key Resource Requirements Estimate.

5.2.1 DT&E Resource Requirements Estimate.

Preliminary estimates of resources required to support TC-AIMS II Software Development Test sufficient to provide planners with a rough order of magnitude estimate are contained in Table 5-3.

Table 5-3 SDT Resource Estimates

Task(s)	ARMY	NAVY	USMC
Develop SDT Test Scenarios	2-3 personnel for 2 weeks	1-2 personnel for 1 week	2 personnel for 2 weeks
SDT Delta Testing	4 personnel for 3 days	4 personnel for 3 days	4 personnel for 3 days
Observe SDT/ Support DAG	1 person during each SDT	1 person during each SDT	1 person during each SDT
DAG is Data Authentication Group. The requirement to observe other Service SDT and support DAG requirements will probably not be needed if all SDTs for all Services are conducted concurrently.			

5.2.2 Live Fire Test and Evaluation.

N/A

5.2.3 OT&E Resource Requirements Estimate.

Preliminary estimates of resources required to support a TC-AIMS II Operational Test sufficient to provide planners with a rough order of magnitude estimate are contained in Table 5-4.

Specific requirements to support the Block 2 OT are detailed in the MOUs signed between the PM TIS, OTC and each service site. No other unique OT&E resources are required. Integrated Logistics Support Plan specifies the Test Support Packages required to conduct OT. Personnel requirements are unknown until units and test sites are selected.

Table 5-4: OT Resource Estimates

Task(s)	ARMY	NAVY	USMC
OT Training	5-23 May 2003	14 Apr – 2 May 03	1-22 August 2003
FUNOPS	27 May – 13 June 2003	5 May – 23 May 2003	25 August – 12 September 2003
Pilot Test	11-13 June 2003	21-23 May 2003	10 – 12 September 2003
Record OT	16-27 June2003	27 May – 6 June 2003	15 September – 1 October 2003

5.2.4 Resource Shortfalls Introducing Significant Test Limitations.

N/A

5.2.5 Discussion of Shortfall Impact.

NA

5.2.6 Planned Corrective Action.

N/A

ANNEX A – BIBLIOGRAPHY

AR 73-1 Test and Evaluation Policy, 12 January 2002
CJCS Instruction 6212.01B, Interoperability and Supportability of National Security Systems and Information Technology Systems, 8 May 2000
CJCS Instruction 3020.01 Managing, Integrating, and Using Joint Deployment Information Systems, 12 June 2000
DA Pam 73-7, Software Test and Evaluation Guidelines, 25 July 1997
Defense Information Infrastructure (DII) Common Operating Environment (COE) Integration and Run Time Specification (I&RTS), Revision 4.1, August 2000
DoD Directive 4630.5, Compatibility, Interoperability, and Integration of Command, Control, Communications, Computers, and Intelligence (C4I) Systems, 12 November 1992
DOD Memorandum, Defense Acquisition, 30 October 2002
DoD Directive 5200.28, Security Requirements for Automated Information Systems (AISs), 21 March 1988
DoD Instruction 4630.8, Procedures for Compatibility, Interoperability, and Integration of Command, Control, Communications, and Intelligence (C4I) Systems, 18 November 1992
DoD Instruction 5200.40., DoD Information Technology Security Certification and Accreditation Process (DITSCAP), 30 December 1997
DoD Joint Technical Architecture (JTA), Version 2.0, 26 May 1998
IEEE 1044.1-1995 IEEE Guide to Classification for Software Anomalies
IEEE 12207.2-1997 IEEE Guide - Industry Implementation of ISO 12207:1995 Standard for Information Technology- Software Life Cycle Processes- Implementation Considerations
JIEO/JITC Circular 9002, Requirements Assessment and Interoperability Certification of C4I and AIS Equipment and Systems, 23 January 1995
OSD (DOT&E) Memorandum, Subject: Guidelines for Conducting Operational Test and Evaluation for Software-Intensive System Increments, 10 October 1996
TC-AIMS II Acquisition Program Baseline (APB), (May 01)
TC-AIMS II Acquisition Strategy, (Signed 12 April 2000 by PEO STAMIS)

TC-AIMS II Configuration Management Plan, 14 January 2000
TC-AIMS II Mission Needs Statement (MNS), 07 August 1997
TC-AIMS II Operational Requirements Document (ORD), 25 March 1999
TC-AIMS II System Evaluation Plan

ANNEX B – ACRONYMS

ACRONYM	DEFINITION
0 to n	-Numeric-(zero thru n)
A	-A-
A*	Army (*Table 1-1, SER Column)
AAE	Army Acquisition Executive
AALPS	Automated Air Load Planning System (Will replace CALM)
ACA/OCONUS	Air Clearance Authority / Outside the Continental United States
ADM	Acquisition Decision Memorandum
ADNET	Automated Distribution Network (GSA's system)
ADUSD (L/TP)	Assistant Deputy Under Secretary of Defense (Logistics/Transportation Policy)
AE	Army Europe
AEC	Army Evaluation Center
AF	Air Force (*Table 1-1, SER Column)
AI	Additional Issues
AIS	Automated Information System
AIT	Automatic Identification Technology
AM	Asset Management
AMS	Automated Manifesting System
AMSS	Ammunition Management Standard System
ANSI	American National Standards Institute
AO	Action Officer
AOI	Additional Operational Issue
APB	Acquisition Program Baseline
API	Application Programming Interface
ASD (C3I)	Assistant Secretary of Defense (Command, Control, Communications and Intelligence)
ASE	Adaptive Server Enterprise
AST	ATEC Systems Team (formerly OST)
AT&L	Acquisition, Technology, and Logistics
ATAC-AF	Advance Traceability and Control - Air Force
ATEC	Army Test and Evaluation Command
ATLASS-1	Asset Tracking Logistics Automated Supply System
B	-B-
BN	Battalion
C	-C-

ACRONYM	DEFINITION
C-days	The unnamed day on which a deployment operation commences or is to commence
C/SCS	Cost/Schedule Control System
C2	Command and Control
C2IPS	Command and Control Information Processing System
C4	Command, Control, Communications and Computers
C4I	Command, Control, Communications, Computers and Intelligence
CA	Certification Agent
CAC	Common Access Card
CAEMS	Computer-Aided Embarkation Management System
CALM	Computer-Aided Load Manifesting
CAPS II	Consolidated Aerial Port System II (to be replaced by GATES) (aka: CAPSII/GATES)
CAS-B	Combat Ammunition System Base Level
CBL	Commercial Bill of Lading
CD-ROM	Compact Disk – Read Only Memory
CE	Continuous Evaluation
CEP	Certification Evaluation Plan (JITC)
CFM-ETA	CONUS Freight Management Electronic Transportation Acquisitions
CFM-Host	CONUS Freight Management System - Host
CIM	Corporate Information Management
CINC	Commander in Chief
CJCS	Chairman of the Joint Chiefs of Staff
CM	Configuration Management
CMB	Configuration Management Board
CMF	Critical Mission Functions
CMOS	Cargo Movement Operations System
COI	Critical Operational Issues
COIC	Critical Operational Issues and Criteria
COMPASS	Computerized Movement Planning and Status System
COOP	Continuity of Operations Plan
COTS	Commercial Off The Shelf
CPX	Command Post Exercise
CRIF	Cargo Routing Information File

ACRONYM	DEFINITION
CRS	Component Repair Squadron
CSDT	Computer Software Development Test
CSC	Critical System Characteristics
CSCI	Computer Software Configuration Item
CSSCS	Combat Service Support Control System
CTP	Critical Technical Parameters
CULT	Common User Land Transportation
CWBS	Contract Work Breakdown Schedule
D	-D-
DA	Department of the Army
DAA	Designated Approving Authority (formerly: Designated Accreditation Authority)
DALO-	Department of the Army Deputy Chief of Staff for Logistics (office symbol)
DAMMS-R	Department of the Army Movement Management System-Redesign
DA PAM	Department of the Army Pamphlet
DBMS	Data Base Management System
DCSLOG	Deputy Chief of Staff for Logistics (Army Staff)
DD	Defense Department (Form)
DDM	DoD Data Model
DII	Defense Information Infrastructure
DII COE	Defense Information Infrastructure Common Operating Environment
DII COE / JTA	Defense Information Infrastructure, Common Operating Environment / Joint Technical Architecture
DISA	Defense Information Systems Agency
DISN	Defense Information System Network
DIST	Defense Integration Support Tool
DLA	Defense Logistics Agency
DMLSS	Defense Medical Logistics Standard System
DoD	Department of Defense
DOIM	Director of Information Management
DOL	Directorate of Logistics
DOT&E	Director, Operational Testing and Evaluation
DSN	Defense Switched Network

ACRONYM	DEFINITION
DSS	Distribution Standard System
DT	Developmental Testing
DT&E	Developmental Test and Evaluation
DT/OT	Developmental Test / Operational Test
DTR	Defense Transportation Regulation
DTRR	Developmental Test Readiness Review
DTS	Defense Transportation System
DTTS	Defense Transportation Tracking System
DUSA-OR	Deputy Undersecretary of the Army - Operations Research
DUSD (L)	Deputy Undersecretary of Defense (Logistics)
E	-E-
EA	Electronic Attack
EDI	Electronic Data Interchange (see also EC/EDI)
EDP	Event Design Plan
EMP	Electromagnetic Pulse
EMS	Electronic Maintenance Squadron
EUCOM	European Command
F	-F-
FAB	Field Assistance Branch
FACTS	Financial Air Clearance Transportation System
FAR	Federal Acquisition Regulation
FD	Functional Description
FDSC	Failure Definition and Scoring Criteria
FOC	Full Operational Capability
FQT	Functional Qualification Test (*USAF. Formal testing conducted by developer*)
FRAP	Facilitated Risk Analysis Process
FS	Fighter Squadron
FSS	Fast Sealift Ships
FSSG	Force Service Support Group
FTP	File Transfer Protocol
FUNOPS	FUNctional OPerationS (USA ATEC term denotes actual SOP user operation of a new system prior to formal test)
FY	Fiscal Year
G	-G-

ACRONYM	DEFINITION
GATES	Global Air Transportation and Execution System
GB	Gigabyte
GBL	Government Bill of Lading
GCCS-A	Global Command and Control System – Army
GCSS-A	Global Combat Support System-Army
GCSS-AF	Global Combat Support System – Air Force
GDSS	Global Decision Support System
GOPAX	Group Operational Passenger System
GOTS	Government Off-The-Shelf
GSA/ADNET	GSA/Depot Transportation System (ADNET)
GTN	Global Transportation Network
H	-H-
HCI	Human-Computer Interface
HEROS V	German Convoy Scheduler
HFE	Human Factors Engineering
HHG	Household Goods
HP	Hewlett Packard
HQ	Headquarters
HQDA	Headquarters, Department of the Army
HSIP	Human Systems Integration Plan
I	-I-
IAW	In Accordance With
IBS	Integrated Booking System
ICEP	Interoperability Certification Evaluation Plan
ICODES	Integrated Computerized Deployment System
ID	Identification
IDE	Independent Developmental Evaluator
IDP	Incremental Development Package (April 2000 TC-AIMS II development strategy)
IDT	Independent Developmental Test
IEP	Independent Evaluation Plan
IER	Independent Evaluation Report
IKP	Instructor and Key Personnel
ILS	Integrated Logistics System/Supportability
ILS-S	Integrated Logistics System - Supply

ACRONYM	DEFINITION
ILSMIS	Integrated Logistics Support Management Information System
ILSP	Integrated Logistics Support Plan
IOC	Initial Operational Capability
IOE	Independent Operational Evaluator
IOPCERT	Interoperability Certification (DISA (JITC) term)
IOT	Initial Operational Test
IOTE	Initial Operational Test & Evaluation
IP	Internet Protocol
IPT	Integrated Product Team
I&RTS	Integrated and Run Time Specification
ISDP	Information Systems Design Plan
ISEC	Information Systems Engineering Command (US Army)
ISEC-TIC	Information Systems Engineering Command – Technology Integration Center
IT	Information Technology
IT-OIPT	Information Technology Overarching Integrated Product Team
ITO	Installation Transportation Office/Officer
ITO / TMO	Installation Transportation Office/ Traffic Management Office
ITPS	Integrated Test Program Schedule
ITV/TAV	In-Transit Visibility / Total Asset Visibility
IV&V	Independent Verification & Validation
IW	Information Warfare
J	-J-
J*	Joint (Services) (*Table 1-1, SER Column)
JCS	Joint Chiefs of Staff
JDL	Joint Data Library
JFRG II	Joint Force Requirements Generator II
JIEO	Joint Information and Engineering Organization
JITC	Joint Interoperability Test Command
JOPES	Joint Operational Planning and Execution System
PM TIS	Program Manger, Transportation Information Systems
JRO	Joint Requirements Office (TC-AIMS II)
JROC	Joint Requirements Oversight Council
JTA	Joint Technical Architecture (see also/associated with Interoperability, COE)
JTAV	Joint Total Asset Visibility
JTCC	Joint Transportation Corporate Information Management (CIM) Center
JTMB	Joint Transportation Management Board
K	-K-
Kb	Kilobytes

ACRONYM	DEFINITION
KPP	Key Performance Parameters
L	-L-
LAN	Local Area Network
LHA	Landing Helicopter Amphibious
LOGMARS	Logistics Application of Automated Marking and Reading Symbols,
LOGMOD	Logistics Module
LP	Load Planning
LSS	Logistics Support Squadron
LUT	Limited User Test
M	-M-
MACOM	Major Command (Army)
MAGTF	Marine Air Ground Task Force
MAGTF II	Marine Air Ground Task Force II
MAIS	Major Automated Information System
MAJCOM	Major Command (Air Force)
MANPER-B	Manpower Personnel Readiness Module-Base Level
MANPRINT	Manpower and Personnel Integration
MAOPR	Minimum Acceptable Operational Performance Requirements (obsolete)(now MOES)
MARCORSYSCOM	Marine Corps System Command
MC	Movement Coordination
MC	Marine Corps (*Table 1-1, SER Column)
MCC	Movement Control Center
MCOTEA	Marine Corps Operational Test and Evaluation Activity
MCT	Mission Critical Tasks
MDA	Milestone Decision Authority
MDAP	Major Defense Acquisition Program
MDSS II	MAGTF Deployment Support System II
ME	Movement Execution
MEF	Marine Corps Expeditionary Force
MEP	Mobile Electric Power
MEU	Marine Expeditionary Unit
MH	Military Handbook

ACRONYM	DEFINITION
MMS	Materiel Management System
MMT	Multi-Media Training
MNS	Mission Need Statement
MOA	Memorandum of Agreement
MOBCON	Mobilization Control
MOE	Measure of Effectiveness
MOES	Measures of Effectiveness and Suitability
MOBEX	Mobility Exercise
MOP	Measure of Performance
MOS	Military Occupational Specialty
MP	Movement Planning
MPMIS	Military Police Management Information System
MRM	Management Reform Mandate
MS	Microsoft
MSL	Military Shipping Label
MTBOMF	Mean Time Between Operational Mission Failure
MTMS	Munitions Traffic Management System
MTS	Military Tracking System
MTTR	Mean Time To Repair
N	-N-
N*	Navy (*Table 1-1, SER Column)
NA	Not-Applicable
NAVMC	Navy/Marine Corps
NCFMIS	Navy Construction Force Management Information System
NIMMS	NADEP (Naval Aviation Depot) Inventory Materiel Management System
NSIPS	Navy Standard Integrated Personnel System
NSM	Network and Systems Management
NT	New Technology
O	-O-
ODCSLOG	Office of the Deputy Chief of Staff for Logistics (Army)
OE	Operational Evaluation
OEL	Organizational Equipment List

ACRONYM	DEFINITION
OIPT	Overarching Integrated Product Team
OMA	Operation and Maintenance Army
OMC	Optical Memory Cards
OPA	Other Procurement Army
OPR	Organizational Personnel Roster
ORD	Operational Requirements Document
OSD	Office of the Secretary of Defense
OSS	Operational Support Squadron
OST	OPTEC System Team(OBSOLETE TERM: See AST)
OT	Operational Test
OTA	Operational Test Agency
OTC	Operational Test Command (formerly TEXCOM)
OT&E	Operational Test and Evaluation
OTP	Operational Test Plan
OTRR	Operational Test Readiness Review
P	-P-
P3I	Pre-Planned Product Improvement
PC	Personal Computer
PCR	Program Change Request
PDF	Portable Data file (Used with 2d Barcode)
PEO	Program Executive Officer / Office
PEO EIS	Program Executive Office
PM	1. Project Manager 2. Program Manager
PO	Project Officer
POA	Pattern Of Analysis
POC	Point of Contact
POD	Port of Debarkation
POE	Port of Embarkation
PSA	Principal Staff Assistant
PSTN	Public Switched Telephone Network
Q	-Q-
	NONE
R	-R-

ACRONYM	DEFINITION
RAM	Reliability, Availability, and Maintainability
RDTE	Research, Development, Test & Evaluation
REPSHIPS	Report of Shipments
RF	Radio Frequency
RFID	Radio Frequency Identification
RFW	Radio Frequency Weapons
ROLMS	Retail Ordnance Logistics Management System
R&M	Reliability and Maintainability
S	-S-
SAAM	Special Assignment Airlift Mission
SAAS	Standard Army Ammunition System (to be replaced by GCSS-Army)
SA-DBA	System Administrator – Data Base Administrator
SBSS	Standard Base Supply System (replacing ILS-S) (aka: SBSS/ILS-S)
SBU	Sensitive but Unclassified
SDD	Software Design Descriptions
SDF	Software Development Folders
SDT	Software Development Testing
SEP	System Evaluation Plan Note: Versions: Functional (SEP-F), Technical (SEP-T), Developmental (SEP-D)
SER	System Evaluation Report
SF	Standard Form (Form)
SFOR 6	Stabilization Forces (6^{th} Rotation)
SFS	Security Forces Squadron
SFUG	Security Features Users' Guide
SHADE	Shared Data Environment
SIA	Systems Interface Agreements
SIDPERS 3	Standard Installation/Division Personnel System III
SME	Subject Matter Expert
SMMP	System Manpower and Personnel Integration (MANPRINT) Management Plan
SMTP	Simple Mail Transfer Protocol
SOP	Standard Operating Procedure

ACRONYM	DEFINITION
SQDN	Squadron
SQT	Software Qualification Test
SQTP	Software Qualification Test Plan
SRS	Software Requirements Specification
SSAA	System Security Authorization Agreement
STAMIS	Standard Army Management Information Systems
STANAG	Standard NATO Agreements
STRAP	System Training Plan (Army)
SUN	Shipment Unit Numbers
SUP	Supply Squadron
SUPMIS	Supply-Management Information System
T	-T-
T&E	Test and Evaluation
TAMMIS	Theater Army Medical Management Information System
TAV	Total Asset Visibility (see also ITV/TAV)
TBA	To Be Announced
TBD	To Be Determined
TBF	To Be Furnished
TBP	To Be Published
TC-ACCIS	Transportation Coordinator – Automated Command and Control Information System
TC-AIMS	Transportation Coordinators' Automated Information for Movement System (Marine Corps)
TC-AIMS II	Transportation Coordinators' Automated Information for Movement System II
TCC	Transportation Component Command
TCMD	Transportation Control & Movement Documents
TCN	Transportation Control Number
TCP-IP	Transmission Control Protocol-Internet Protocol
TDP	Test Design Plan
TDR	Tonnage Distribution Roster
TDY	Temporary Duty
TE&C	Test, Evaluation & Certification (PM TIS, TC-AIMS II work group title)

ACRONYM	DEFINITION
TEMP	Test and Evaluation Master Plan
TEXCOM	US Army Test and Experimentation Command (OBSOLETE TERM: See OTC)
TIC	Technology Integration Center (USA ISEC)
TI&C	Technical Issues and Criteria
TIR	Test Incident Report
TIWG	Test Integration Working Group (obsolete) (now: Test & Evaluation Working-level Integrated Product Team)(See WIPT)
TLDM	Transportation Logistical Data Model
TMO	Transportation Management Office
TPFDD	Time Phased Force Deployment Data
TrAMS	Transportation Automated Measuring System
TRANSCOM	Transportation Command (US)
TRNS	Transportation Squadron
U	-U-
UD/MIPS	Unit Diary/Marine Corps Integrated Personnel System
UDAPS(2)	Uniform ADP System
UIC	Unit Identification Codes
ULN	Unit Line Number
UM	Unit Movement
UMO	Unit Movement Officer / Office
UPS	USAREUR Prototype Site
USA	United States Army
USATEC	United States Army Test and Evaluation Command (formerly USAOPTEC)
USAF	United States Air Force
USAISEC	United States Army Information Systems Engineering Command
USAISSDC-L	US Army Information Systems Software Development Center –Lee
USAOPTEC	United States Army Operational Test and Evaluation Command (OBSOLETE TERM: See USATEC)
USAOTC	United States Army Operational Test Command
USAREUR	United States Army Europe
USD (A&T)	Under Secretary of Defense (Acquisition and Technology)
USMC	United States Marine Corps
USMTF	US Message Text Formats
USN	United States Navy

ACRONYM	DEFINITION
USTRANSCOM	United States Transportation Command
UTC	Unit Type Code
V	-V-
	NONE
W	-W-
WIPT	Working-Level Integrated Product Team
WPS	Worldwide Port System
WRS	War Reserve System
X	-X-
	NONE
Y-Z	-Y-Z
	NONE

ANNEX C -- POINTS OF CONTACT

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ATTACHMENT 1 - TC-AIMS II - BLOCK 1 FUNCTIONALITY

NOTE: Cross-reference all mention of "interfaces" with Table 1-1.
NOTE: The Current Block 1 system was previously referred to as "Version 3.01".

REQUIREMENT	VERSION DELIVERED
Integrated information transportation system capability for routine deployment, and redeployment/retrograde operations by employing the same DoD and Service shipment policies and procedures in peace and war and in both the active and reserve forces	3.01
Capable of supporting routine and surge requirements and must automate deployment; and redeployment Processes	3.01
Produce movement documentation.	3.01
Produce unit move data.	3.01
Furnish timely, assured information to major commands (MAJCOMs/MACOMS), transportation component commands, USTRANSCOM, and the Joint Deployment Community	3.01
Provide data for in-transit visibility (ITV) and control over cargo and passenger movement	3.01
Automate the process of planning, organizing, coordinating, and controlling unit-related deployments	3.01
Automate the process of planning, organizing, coordinating, and controlling redeployment	3.01
Interface with the GTN	3.01
It will interface with JOPES through the use of the JFRG II	3.01
Produce movement documentation and unit move information	3.01
Compliant with the JTA with the exception of DII-COE (see below)	3.01
Use tactical, garrison and commercial communications to operate in both garrison and deployed field operational environments and directly support unit and force commanders, in-theater mode operators supporting military operations.	3.01 partial
Provide an automated transportation planning and execution capability for unit and individual cargo movements and support RSO&I operations within the theater of operations	3.01 partial
Provide units the capability to rapidly plan and deploy to meet CINC-required	3.01

REQUIREMENT	VERSION DELIVERED
delivery dates	
In a networked environment, support preparation, processing, and documentation commensurate with the volume transportation movement information at the Task Organization level; normally at the Major Subordinate Command levels	3.01
Support database and system maintenance activities that can be scheduled around deployment operations and exercises	3.01
Database and systems maintenance activities, specifically backups, that at no time preclude user access to the system	3.01
Allow units, deployment support activities, movement control & coordination organizations to maintain equipment and personnel databases	3.01
Automate movement planning processes as defined by information flows for matching TPFDD cargo & personnel detail with actual unit deployment lists, convoy movement data, and DTS cargo movement procedures	3.01
Provide an ability to organize unit and organizational deployment list data into aircraft, ship, rail, (including EUCOM rail car data), truck, and container load planning data, such as air cargo chalks, or ship team assignments	3.01
For rail movements, it will be the automated tool to assist load planners in developing actual load plans	3.01
Should possess the capability to notify the origin terminal if information sent to it is not readable	3.01
Operate on existing information infrastructure networks, or in a standalone mode, for occasions where robust communications are not available	3.01
Operable and maintainable under all conditions of climate and terrain where Joint Task Forces deploy	3.01
Allow movement coordinators to plan and execute unit level activities in support of force deployments and redeployment across the full spectrum of operations	3.01
Receive electronic data input from external materiel management [ATLASS only] , personnel, and TPFDD feeder systems and from AIT devices	3.01
System: AALPS Service: J. Description: Automated Air Load Planning System. (OUTPUT)	3.01
System: ATLASS-1 Service: MC Description: Asset Tracking Logistics Automated Supply System. (INPUT)	3.01
System: CAEMS Service: MC Description: Computer-Aided Embarkation Management System (INPUT/OUTPUT)	3.01

REQUIREMENT	VERSION DELIVERED
System: CALM Service: J Description: Computer-Aided Load Manifesting (OUTPUT).	3.01
System: CMOS Service: J Description: Cargo Movement Operations System Description: Cargo Movement Operations System (INPUT/OUTPUT)	3.01
System: COMPASS Service: A Description: Computerized Movement Planning and Status System. (INPUT/OUTPUT)	3.01
System: GATES Service: J Description: Global Air Transportation and Execution System (OUTPUT)	3.01
System: GTN Service: J Description: Global Transportation Network (OUTPUT)	3.01
System: ICODES Service: J Description: Integrated Computerized Deployment System (INPUT/OUTPUT)	3.01
System: JFRG II Service: J Description: Joint – Force Requirements Generator (INPUT/OUTPUT)	3.01
System: LOGMOD Service: AF Description: Logistics Module (INPUT/OUTPUT)	3.01
System: MAGTF II Service: MC Description: Marine Ground Task Force II (INPUT/OUTPUT)	3.01
System: MANPER-B Service: AF Description: Manpower Personnel Readiness Module (INPUT/OUTPUT)	3.01
System: MDSS II Service: MC Description: MAGTF Deployment Support System (INPUT/OUTPUT)	3.01
(System: NCFMIS Service: N Description: Naval Construction Force Management Information System (INPUT)	3.01
System: ROLMS Service: MC Description: Retail Ordnance Logistics Management System (INPUT)	3.01
System: SIDPERS 3 Service: A Description: Standard Installation Division Personnel System (INPUT)	3.01
System: TC-ACCIS Service: A Description: Transportation Coordinators' Automated Command and Control Information System (OUTPUT/INPUT)	3.01
System: TC-AIMS II Service: J Description: Transportation Coordinators' – Automated Information for Movement System II (OUTPUT/INPUT)	3.01
System: UD/MIPS Service: MC Description: Unit Diary/marine Corps Integrated personnel System (INPUT)	3.01
System: WPS Service: J Description: Worldwide Port System (OUTPUT)	3.01

REQUIREMENT	VERSION DELIVERED
The system must have a capability to receive input from peripheral Automatic Identification Technology devices capable of reading from the AIT media listed in Table 2 of the ORD. [Linear Bar Codes, 2D Bar Codes] Excludes CAC and Optical Memory Cards (IDP)	3.01
The database must be designed such that all required information elements necessary to produce specified outputs or read defined inputs are included. This is not a measure of data quality	3.01
TC-AIMS II data dictionary should be accurate. Accuracy describes the format, content, compatibility, and validity (size, class or type). The DoD Data Model (DDM) should be a guideline to facilitate data compatibility and interoperability with other systems. Beyond these definitions, TC-AIMS II will not be responsible for editing faulty information	3.01
Provide an automated ability for users to process data and information into decisions and execution actions to accomplish appropriate transportation and deployment tasks	3.01
Provides an ability for users to accomplish job related tasks as efficiently, or as well as the best of breed of existing systems	3.01
The system must meet the Processing Data Parameters listed in Table 3 of the ORD. Activity Description: Maintain unit level deployment database for unit level equipment, container & pallet, and personnel lists associated with any Battalion or Squadron Level unit. Threshold: Standalone: 75,000 cargo detail records	3.01
The system must meet the Processing Data Parameters listed in Table 3 of the ORD. Activity Description: Create, receive, maintain, and transmit Parent-Child deployment relationships to include use of deployment echelons. (Example: Box on a truck, pallet in container) Threshold: Standalone: 98,901 parent-child relationships. Single Server: 1,483,515 parent-child relationships	3.01
The system must meet the Processing Data Parameters listed in Table 3 of the ORD. Activity Description: Movement Planning of cargo & personnel detail – aggregate Unit Level Databases. (Capability to merge or "rollup" unit level databases up the chain of command, assuming an average of 300 cargo line items per ULN, and 250 personnel billet line items per ULN) Threshold: Standalone: 2,500 Unit Line Numbers (ULN)s containing sourced cargo or personnel detail records matched to UTC Cargo or personnel force requirement details. Single Server: 10,000 ULNs	3.01
The system must meet the Processing Data Parameters listed in Table 3 of the ORD. Activity Description: Movement Planning: Ability to pass cargo and personnel detail data to JOPES feeder systems and GTN to report, load plan, manifest, and source ULNs of a force requirement. Threshold: Sealift ULNs:	3.01

REQUIREMENT	VERSION DELIVERED
10 C-Days worth of data Airlift ULNs: 3 C-Days worth of data. Local or CULT Ground transportation: 30 days	
The system must meet the Processing Data Parameters listed in Table 3 of the ORD. Activity Description: Ship Load Planning and Manifesting. Ability to store and process cargo data details for export to ship load planning systems in support of port operations and embarkation. (Based on a typical LHA or FSS ship load plan): Threshold: Cargo detail data for 5 ships at a single terminal or water port during a 72-hour period/Activity Description: Aircraft Load Planning and Manifesting. (Based on a typical C-141 aircraft load plan) Threshold: Cargo & Personnel detail data for 50 aircraft sorties processed at a single air terminal during a 24-hour day	3.01
The system must meet the Processing Data Parameters listed in Table 3 of the ORD. Activity Description: Rail Load Planning (Based on a 100 car train) Threshold: Cargo detail data for 25,000 shipment units	3.01
The system must meet the Processing Data Parameters listed in Table 3 of the ORD. Activity Description: Surface & Ground transportation Modes. Receive or Prepare, generate, and transmit Bills of Lading (GBLs [Rail only])... or Transportation Control Movement Documents (TCMDs) per 24-hour day: Threshold: GBLs ... 500 TCMDs: 1,000 …	3.01
The system must meet the Processing Data Parameters listed in Table 3 of the ORD. Activity Description: Convoy Movement Requests (based on a 25-vehicle convoy). Threshold: 25 per day Objective: 50 per day	3.01
The system must meet the Processing Data Parameters listed in Table 3 of the ORD. Activity Description: Ad-Hoc Queries. A trained user can extract a simple query, such as; determining equipment density for a given unit, or preparing a list of GBLs moving equipment to a given port. Threshold: 45 minutes to formulate the query and obtain correct results	3.01
The system must meet the Processing Data Parameters listed in Table 3 of the ORD. Activity Description: Standard Reports. Threshold: 20 minutes Objective: 10 minutes	3.01
TC-AIMS II must properly generate reports, forms, labels, tag data, OMC as listed in Table 4 of the ORD. Output Type: Reports Description: Ad Hoc or Standard (pre-formatted) Threshold: Completeness: .95 Accuracy: .95 Speed: <= 1 min per page	3.01
TC-AIMS II must properly generate reports, forms, labels, tag data, OMC as listed in Table 4 of the ORD. Output Type: Standard Forms Description: DD, ... AE [1 only] and other paper outputs Threshold: Completeness: .95 Accuracy: .95 Speed: <= 1 min per page	3.01

REQUIREMENT	VERSION DELIVERED
TC-AIMS II must properly generate reports, forms, labels, tag data, OMC as listed in Table 4 of the ORD. Output Type: Labels Description: LOGMARS, Military Shipping Labels, Equipment ID labels Threshold: Completeness: .95 Accuracy: .95 Speed: <= 30 seconds per label Durability:	3.01
TC-AIMS II must properly generate reports, forms, labels, tag data, OMC as listed in Table 4 of the ORD. Output Type: Radio Frequency Tags (write data) Description: 256 Kb or larger capacity Threshold: Completeness: .875 Accuracy: .875 Speed: <= 1 min per tag	3.01
The TC-AIMS II must be logistically supportable	3.01
TC-AIMS II will be fielded on COTS computers that meet JTA compliance standards, and Service specific computer hardware acquisition requirements	3.01
The TC-AIMS II will be supported using standard Service systems support programs in place for Automated Information Systems at the time of fielding	3.01
TC-AIMS shall have a Mean Time Between Operational Mission Failure (MTBOMF) of 300 hours (threshold), 500 hours (objective). Mission duration for one crew is 12 hours. MTBOMF is the anticipated length of time a system will be operational between operational mission failures. An operational mission failure is defined as that condition in which the system cannot perform or accomplish the stated mission. Failure can be due to software, hardware, or operator error	3.01
TC-AIMS II availability will be 0.95 (threshold); 0.975 (objective)	3.01
TC-AIMS II non-availability will be correctable 90% of the time by simply rebooting the computer and the reboot will take less than 3 minutes	3.01
When TC-AIMS II non-availability is not correctable by a reboot, the TC-AIMS Help Desk must be able to respond to and correct the problem within 2 hours 80% of the time	3.01
For Help Desk calls that can not be successfully corrected within 2 hours, the problem will be corrected within 24 hours 99% of the time	3.01
TC-AIMS II must be maintainable. Maintenance will be conducted in accordance with the maintenance concept, the Integrated Logistics Support Plan (ILSP), and the Service annexes to the ILSP	3.01
Mean Time to Repair (MTTR) at the organizational level (system operation) will be 1 hour (threshold); 30 minutes (objective)	3.01
Mean Time to Repair (MTTR) at the organizational level (lost information) is 8 hours (threshold); 1 hour (objective)	3.01
TC-AIMS II must be capable of movement to, from and within the Joint or	3.01

REQUIREMENT	VERSION DELIVERED
Service Component Area of Operations	
Fielding of TC-AIMS II to any unit should not require the assignment of additional occupational specialties to the organization	3.01
TC-AIMS II in some cases replaces standalone systems that were not built to operate in a network environment. The TC-AIMS II should be able to be operated and maintained with minimal additional training for users having the appropriate MOS, beyond which is currently taught for the legacy systems being replaced	3.01
TC-AIMS II system operators should require no more than two weeks (threshold); one week (objective) system training to become proficient operators of the system	3.01
TC-AIMS II system administrators should require no more than two weeks (threshold); one week (objective) training to allow them to become proficient system administrators of the system	3.01
TC-AIMS II database administrators should require no more than two weeks (threshold); one weeks (objective) training to allow them to become proficient database administrators of the system	3.01
TC-AIMS II will employ intuitive operating procedures (based on the processes which are being automated) characterized by a consistent graphical user interface across the range of applications	3.01
Visual indicators and screens will be easily readable in all ambient light conditions without the need for ancillary equipment	3.01
TC-AIMS II shall provide the capability for system data input and control using multiple means (keyboard and mouse or trackball)	3.01
TC-AIMS II shall contain no hazards that will cause death, severe occupational illness, or irreversible damage to health	3.01
TC-AIMS II will use currently available COTS technology	3.01
The system will not require new occupational specialties for the DoD military components	3.01
System training will address operator, system administration, data administration and system maintenance	3.01
The design of TC-AIMS II will be in accordance with appropriate DoD ergonomic manuals and regulations regarding HCI requirements (e.g., Style Guide). Visual indicators and messages shall be easy to read in varying light conditions	3.01
Displays shall be adjustable for varying light conditions	3.01

REQUIREMENT	VERSION DELIVERED
TC-AIMS II will be Year 2000 compliant	3.01
The security strategy for TC-AIMS II will be based on guidance by Public Law and US Government information assurance community policy, directives, and instructions	3.01
Must meet the requirements established for the highest classification of data accessible in accordance with applicable standards and regulations	3.01
TC-AIMS II will receive or process information according to the guidelines set forth by DoD and each Service, including protection for data aggregation at a higher level as necessary	3.01
Applications will be written to system component Application Programming Interface standards	3.01
The TC-AIMS II computer resources will be characterized for DII COE compliance	3.01
System shall be compatible with existing C4I systems and equipment, and interface with other U.S. and ... functionally related C4I systems and equipment	3.01
TC-AIMS II will operate on COTS hardware, which must be capable of being powered by US Military Mobile Electric Power (MEP) power sources and host nation household/commercial power supply	3.01
Shall be capable of operation from standard MEP generators, shipboard, aircraft, or vehicle-generated power	3.01
The TC-AIMS II will be in compliance with all applicable standards' categories within the DoD JTA to include, but not limited to: information processing standards category, information transfer standards category, information modeling and information standards category, human-computer interface standards category, and information systems security standards category	3.01
It will be capable of operating with functioning interfaces, to identified Service operational support systems, to access information in support ...Unit Movement operations	3.01
System: IBS Service: J Description: Integrated Booking System (INPUT/OUTPUT)	3.01 (AR and AF, only)
The system must read and write AIT media	3.01 (less RF ID)
System: CFM Host. Service: J. Description: CONUS Freight Management System – Host. (OUTPUT)	3.01 (Rail only)

REQUIREMENT	VERSION DELIVERED
Must produce outputs in the form of electronic interfaces (to external mode clearance, cargo booking, load planning, transportation C2, TPFDD Feeder, and common use transportation systems), as well as produce standard labels, tags, forms, and reports used to accomplish transportation and deployment functions	3.01 (Subset of all forms and reports)
The automated activities will be based on standard movement forms, reports, requests, and tasking procedures from the legacy migration systems or the manual forms and information flows currently used to accomplish movement coordination	3.01 (subset of forms, flows, legacy migration systems)
TC-AIMS II will not increase the number of personnel or change the end strengths of the DoD military components	3.01 – Service
Based on the optimal hardware configuration, a minimum of 80 percent spare computer memory over delivered memory used shall be available for expansion for future use	3.01 – Service
Accept data in timeframes that support operational mission or task completion, from the external systems	3.01 for I/Fs identified
TC-AIMS II must comply with applicable provisions in the JTA to include DII COE, minimum level 6, and use DoD standardized information where compatible	3.01DII-COE is Level 4

ATTACHMENT 2 - TC-AIMS II - BLOCK 2 FUNCTIONALITY

TC-AIMS II Block 2 provides enhancements to the overall system. These enhancements include automated data problem reporting, single platform initiative, context sensitive help, receiving and processing PAX, enhanced ITV and redeployment functions. Improved reliability, availability, and maintainability.

TC-AIMS II Block 2 provides capability to read Common Access cards into the system. Also, included are requirements deviated from the Block 1 Release, new regulatory requirements and approved enhancements to the software required prior to a Service fielding decision.

TC-AIMS II Block 2 requirements include Web enablement, a Central Enterprise Management/System Administration system, links through Service portals, and a reduction of servers while maintaining standalone and deployed network capabilities.

TC-AIMS II Block 2 combines applications for transportation and information into a Single Platform Initiative.

TC-AIMS II Block 2 must comply with Section 508, and with applicable provisions in the JTA to include DII/COE, level 5.

TC-AIMS II Block 2 will continue support to Block 1 interfaces with enhancements for the Army, Navy and Marine Corps.

ATTACHMENT 3 - FUTURE OPERATIONAL CAPABILITIES BY PROGRAM BLOCK

The following are key TC-AIMS II capabilities extracted from the March 1999 approved ORD. The capabilities are allocated to a program Block for implementation.

BLOCK 3

Planning Enhancements

IDP 2 - Plan Sourcing enhances the capability to create and source Unit Movement plans. Adds interfaces to update unit equipment operational status from Services maintenance Systems. This IDP will also provide additional reports generating capability.

Movement Control

IDP 3- Movement Control provides the ability to conduct initial RSO&I in a Theater of Operations. Provides an initial capability for port operator's to gain visibility of inbound units and cargo; and for a Movements Control Center to task available assets, and schedule, manage, and track multiple convoy movements. Full RSO&I capability will be attained by implementing IDP 6 and IDP 7.

Map Graphics

IDP 11 - Map Graphics enhances convoy planning through the use of digitized maps and map graphics.

BLOCK 4

Maritime Propositioning Force Assets

IDP 4- MPF provides capability to manage Maritime Propositioning Force (MPF) assets. Provides capability to support loading, management of cargo onboard, and unloading of MPF vessels. This IDP will principally support USMC/USN requirements; however, Army and Air Force could adapt portions of this capability to manage and report prepo stocks.

Theater Operations

IDP 5 - Unit Dispatch provides capability to maintain and report unit vehicle fleet and driver availability/status, receive equipment support tasks, dispatch vehicles and drivers and, produce associated documentation.

IDP 6 - Theater Mode Operations will provide Theater Mode Operations management capability in the TC-AIMS II application.

Theater Distribution

IDP 7 - Theater Distribution will provide a Theater Distribution management capability in the TC-AIMS II application.

BLOCK 5

Installation Transportation Office/Transportation Management Office

IDP 8 - ITO Interfaces - identifies system interfaces to support ITO business processes. These require a long lead-time to develop and document Interface Agreements with external interfacing systems.

IDP 9 - ITO Business Processes provides (DoD) installation transportation offices, both in CONUS and OCONUS, capability to receive, create, maintain, and transmit data to control, document, and manage assets moving in the DoD transportation system. Provides capability to coordinate transportation services, move passengers, procure commercial carrier support, capture historical shipment information, prepare shipment documentation, and track funds for movement of freight. This IDP includes MRM 15 initiatives.

IDP 10 provides enhancements to ITO business processes. Preplanned Product Improvements

UNASSIGNED

IDP - 12 includes the remaining JRO requirements the Services representatives deferred to a TC-AIMS II Pre-planned Product Improvement (P3I) category.

ATTACHMENT 4 - COIC

NOTE: This is a typed copy of Approval of Critical Operational Issues (COI) for TC-AIMS II. Original and scanned versions available from the TCAIMSII Transportation Information Systems.

Department of Defense Seal

DEPARTMENT OF THE ARMY
OFFICE OF THE PROGRAM EXECUTIVE OFFICER
STANDARD ARMY MANAGEMENT INFORMATION SYSTEMS
(PEOSTAMIS)
9350 HALL ROAD, SUITE 142
FORT BELVOIR, VIRGINIA 22080-5528

REPLY TO ATTENTION OF

SFAE-PS-TC

/i/ 7KC
/d/ 10/28/99

MEMORANDUM THRU Program Executive Officer, Standard Army Management Information Systems

/s/ Approved
David Borland
/d/ 11/19

FOR Director of Information Systems for Command, Control, Communications and C
(DISC4)

SUBJECT: Approval of Critical Operational Issues (COI) for TC-AIMS II

1. Reference memorandum, HQ TRADOC, ATCD-SL, 23 Apr 99, subject: Critical Operational Issues and Criteria (COIC) For the Transportation Coordinators' – Automated Information for Movement System II (TC-AIMS II) (Encl 1).

2. Request approval of attached TC-AIMS II Critical Operational Issues (COI) (Encl 2).

3. COIC for TC-AIMS II were approved by TRADOC in referenced memorandum. COIs are extracted directly from COIC (Encl 3).

4. Point of Contact is Mr. Lee DeArmond, DSN 656-0528.

3 Encls
as

GARY L. WINKLER
PM, TC-AIMS II

TC-AIMS II CRITICAL OPERATIONAL ISSUES AND CRITERIA (COIC)

COIC's cover major areas of security, performance, interoperability, and supportability and maintainability.

Security

Issue

Does TC-AIMS II provide and maintain a level of security consistent with current regulations and policies?

Scope

This issue examines the ability of TC-AIMS II to protect data from unauthorized disclosure and meet the requirements of applicable security policies and directives.

Criteria

1. TC-AIMS II will prevent unauthorized disclosure of data (ref. MNS, Paragraph 4, and ORD, Paragraph 2).

2. TC-AIMS II will limit a user's access to only those areas for which they have been given permission (Ref. MNS, Paragraph 4).

3. TC-AIMS II will protect data in accordance with the highest classification of data accessible (Ref. ORD, Paragraph 5e(2).

Rationale

1. Criterion 1 is based on ORD requirement Paragraph 2, in which TC-AIMS II performs in spite of a variety of external threats such as hackers, etc.

2. Criterion 2 is based on ORD requirement paragraph 2, in which TC-AIMS II performs in spite of a variety of internal threats such as unintentional or intentional destruction of data by users.

3. Criterion 3 is based on ORD requirement Paragraph 2, which requires that TC-AIMS II contain multiple levels of access control to ensure sensitive information related to deployments and movement costs is not compromised. MNS requirement Paragraph 4, which requires TC-AIMS II to be capable of a back-up capability at each server site to provide continuous operational capabilities to customers, is included.

Performance

Issue

Can TC-AIMS II support Joint and Service-specific business processes in the areas of planning, directing, coordinating, and executing the rapid deployment and redeployment of unit movements, traffic management operations including distribution and sustainment activities, and provide accurate and timely data to other related C2, transportation, and planning organizations?

Scope

This issue examines the ability of TC-AIMS II to provide deploying forces with the ability to plan, coordinate, and execute all of the unit level activities necessary to move units, and to provide the CINCs, Joint Staff and supporting establishment with timely and accurate movement information during deployments.

This issue examines whether or not TC-AIMS II can process the information it receives such that a user can accomplish transportation and deployment functions by:

- Performing cargo and personnel sourcing force requirements
- Managing unit deployment information
- Conducting load planning
- Managing organic ground transportation fleets
- Coordinating non-organic transportation requirements
- Produce necessary reports, labels, and forms
- Write to AIT devices

Criteria.

1. TC-AIMS II must be capable of providing timely and accurate critical source data to GTN and feed JOPES through appropriate feeder systems (Ref. ORD, Paragraph 1d(1)) and (Ref. ORD, critical KPP time and accuracy guidelines delineated in Paragraph 4).

2. TC-AIMS II must produce standard labels, tags, forms, and reports needed to accomplish transportation and deployment functions within timeframes set forth in the ORD (Ref. ORD, Paragraph 4a(2)(c)).

Rationale

1. Criterion.1 is based on ORD Requirement Paragraph 1 which requires that TC-AIMS II provide an automated ability for users to process data and information into decisions or execution actions for purposes of Service specific, Joint or Combined Planning of Operations. To accomplish appropriate transportation management activities across the full spectrum of operations as well as ensure that warfighters have access to accurate, complete, and timely data concerning the movement of cargo and passengers. The information must be provided in a timely and accurate manner in accordance with present guidelines in existence for information processed by GTN.

2. Criterion.2 is based on ORD Requirement Paragraph 1, which requires that TC-AIMS II provide an automated ability for users to process data, identify the status of all missions,

and expedite shipments as necessary. ORD, Requirement Paragraph 4a(2)c requires that TC-AIMS II produce outputs in the form of electronic interfaces (to external mode clearance, cargo booking, load planning, transportation C2, TPFDD Feeder, and common use transportation systems). Additionally, the system will produce standard labels, tags, forms, and reports used to accomplish transportation and deployment functions.

Interoperability

Issue

Can TC-AIMS II exchange data with appropriate Joint, Service-unique, and commercial transportation systems and Automatic Identification Technology (AIT) devices? In addition, is TC-AIMS II interoperable with Services' current infrastructure and deployed/tactical data networks?

Scope

This issue examines TC-AIMS II's ability to exchange and share data with Joint and Service-unique supply, transportation, materiel, personnel, finance, TPFDD Feeder systems, Command and Control (C2), commercial, and other systems as specified in the ORD for the purposes of reducing or eliminating manual data input.

This issue examines whether TC-AIMS II is interoperable with AIT devices and the device's software to support accurate and timely data capture.

This issue examines whether TC-AIMS II is interoperable with the deployable tactical and shipboard data networks, and with the in-place infrastructure at Services' posts, bases, camps, and stations.

Criteria

1. TC-AIMS II must accept and export properly formatted data from and to appropriate systems in accordance with System Interface Agreements (Ref. ORD, para 1.a, para 4a(2)(a)(1), and para 4a(2)(b)(1), and 4b (5).

2. TC-AIMS II must be able to receive and use input from peripheral AIT devices (Ref. ORD, para 4a(2)(a)(2)).

3. TC-AIMS II must operate on existing information infrastructure networks, deployable tactical and shipboard data networks or in a stand-alone mode, for occasions where robust communications are not available (Ref. ORD, para 4.a. (1)(c)).

4. TC-AIMS II must operate on existing information infrastructure networks, deployable tactical and shipboard data networks or in a stand-alone mode, for occasions where robust communications are not available (Ref. ORD, para 4.a. (1)(c)).

Rationale

1. Criterion 1 is based on ORD paragraphs 4a(2) (a) and 4a(2) (b), and MNS requirement paragraph 6.7. They requires all TC-AIMS II input and output documentation,

transmissions, and input screens comply with standards established in Standard NATO Agreements (STANAG), Joint US Message Text Formats (USMTF), American National Standards Institute (ANSI), Electronic Data Interchange (EDI) formats, Defense Transportation Regulation (DTR) (DoD Reg 4500.32R), and radio-frequency (RF) tag formats.

2. Criterion 2 is based on ORD requirement paragraph 4.a.(1)(a) and 4.a.(1)(b)6 which requires that TC-AIMS II must read and write AIT media to support all current processes and provide users with a streamlined method to process data and information.

3. Criterion 3 is based on ORD requirement paragraph 1b, which requires that TC-AIMS II be capable of using Commercial Off the Shelf (COTS) hardware. It also requires that TC-AIMS II to provide data to support data transmission as well as the MNS requirement, paragraph 2.3.2, which requires TC-AIMS II be capable of operating with or in spite of existing communication infrastructure in both developed and third world nations.

Supportability/Maintainability

Issue

Is TC-AIMS II supportable, maintainable, and trainable during continuous operations, in a variety of environments and configurations?

Scope:

This issue examines whether TC-AIMS II can operate effectively in various environments in a client-server, deployed client-server, and stand-alone environment.

This issue also examines the intuitiveness of the design of the system, and whether functionally competent users who have had system training, or through on-line help or system tutorials/computer based training on TC-AIMS II can effectively use the application to support traffic management and unit moves operations.

This issue looks at whether system administrators/database administrators can effectively maintain the system after receiving TC-AIMS II training.

This issue looks at whether the system can continue to operate during daily system administrator/database administrator duties, such as a system backup and network, operating system, or database utilities.

Criteria

1. TC-AIMS II must be operable in both garrison and deployed field operational environments, to include client-server, deployed client-server, and stand-alone modes (Ref. ORD, para 1d(1) and 4a(1)(a)).

2. TC-AIMS II must be able to be operated by trained users (Ref. ORD, para 4, Personnel Selection and Training Objective).

3. TC-AIMS II must be logistically supportable IAW Service policy (Ref. ORD, para 4, Logistics Supportability Objective).

4. Routine system server maintenance will not preclude normal user operations (Ref. ORD, para 4a(1)(a)).

5. TC-AIMS II will provide an intuitive and easy-to-use system (Ref. ORD, para 4a(2)(b)(1) and para 5a(d)(2)).

6. TC-AIMS II will provide effective training support that addresses operator, system administration, and system maintenance training, and that enhances the user's ability to learn and use TC-AIMS II. Primary method of training to be provided is a CD-ROM based multimedia package. The CD-ROM package must satisfy the requirements for extension, sustainment, collective, and instructor/key personnel training for a UMO operator course, ITO/TMO operator course, supervisor/manager course, system/database administrator course, doctrine and tactics course and system support course (Ref, ORD, paragraph 5d (3).

Rationale

1. Criterion 1 is based on ORD requirement, paragraphs 1d(1) and 4a(1)(a), which requires TC-AIMS II to be operable and easily supported in all areas where Forces may reside or deploy.

2. Criterion 2 is based on ORD requirement, paragraph 5(d)2, that the TC-AIMS II Human Computer Interfaces (HCI) will be intuitive and easy-to-use system for the average user, thereby minimizing training and maintenance requirements.

3. Criterion 3 is based on ORD requirement paragraph 4, that the system be operable, maintainable and logistically supportable.

4. Criterion 4 is based on ORD requirement paragraph 4.a.(1)(a), which requires during deployment exercises and real-world contingencies that TC-AIMS II be capable of managing day-to-day traffic management and unit movement activities 24 hours a day, seven days a week, and that database and systems maintenance activities will at no time preclude user access to the system.

5. Criterion 5 is based on ORD requirement paragraph 5d(2), para 5d(5), and para 4a(2)(b)(1). It states that TC-AIMS II is merely a tool to help the user accomplish tasks faster and easier than it would be to perform those tasks manually, and the system should be easy to use to minimize training and maintenance requirements.

6. Criterion 6 is based on ORD requirement paragraph 5d (3), which requires TC-AIMS II training support program be evaluated to ensure that it supports the user during peacetime and wartime operations to provide transportation management, and visibility of fleet assets and in-transit cargo.

ATTACHMENT 5 - CTP MATRIX

TEMP ATTACHMENT 5: CRITICAL TECHNICAL PARAMETERS MATRIX				
Specific Performance Requirements	**Required Performance**	**Threshold**	**Objective**	**Notes**
1.0 Data Transmission Accuracy	TABLE 2 TC-AIMS II ORD: Interpreted as applicable to all data transmissions on the first attempt	Completeness .90 Accuracy .95	Completeness .95 Accuracy .98	Unless superceded by applicable SIAs, While lower then the existing TC-ACCIS requirement of 99.9% accuracy, it is consistent in general with the TC-AIMS II ORD specified completeness and accuracy rates.
2.0 Data Conversion	3.1.2a(6) TC-ACCIS FD: Electronically transferred data from external systems shall be automatically converted to usable formats			Interpreted for TC-AIMS II for both input and output transfers. Requirement means no user manual intervention is required to convert data into usable TC-AIMS II data. NOTE: Refer to 1.3 Data Transmission for completeness and accuracy (.90 completeness, .95 accuracy)
3.0 Data Processing Storage Capacity				

TEMP ATTACHMENT 5: CRITICAL TECHNICAL PARAMETERS MATRIX				
Specific Performance Requirements	**Required Performance**	**Threshold**	**Objective**	**Notes**
3.1 Unit level Deployment Data Capacity	Table 3, TC-AIMS II ORD: Maintain unit level deployment database for unit level equipment, container & pallet, and personnel lists associated with any Battalion or Squadron level unit	Standalone: 75,000 cargo detail records, Single Server: 1,000,000 cargo detail records	Standalone: 500,000 cargo detail records, Single Server: 3,000,000 cargo detail records	NOTE: IDE analysis of Battalion and/or squadron sized elements indicates that these totals are unlikely to ever be met in an operational environment. Testing will artificially construct a data set of this size to confirm that the storage capacity can be met. Again, BN/SQD Sized deployment databases will invariably be significantly smaller than this limit.
3.2 Shipment Item Relationships	Table 3: TC-AIMS II ORD: Create Parent-Child shipment item relationships	Standalone: 100 child records per parent record Single Server: 500 child records per parent record	Standalone: 1,000 child records per parent record Single Server: 5,000 child records per parent record	
3.3 Movement Planning Data Aggregation	Table 3: TC-AIMS II ORD: Aggregation: Capability to merge or roll-up unit level databases up a hierarchical chain (assumes average of 300 cargo line items per ULN, and 250 personnel billet line items per ULN	Standalone: 2,500 ULNs, Single Server: 10,000 ULNs	Standalone: 5,000 ULNs, Single Server: 50,000 ULNs	

TEMP ATTACHMENT 5: CRITICAL TECHNICAL PARAMETERS MATRIX				
Specific Performance Requirements	**Required Performance**	**Threshold**	**Objective**	**Notes**
3.4 Movement Planning Feeder Data	Table 3: TC-AIMS II ORD: Capability to pass cargo and personnel detail data to JOPES feeder systems and GTN to report on load plans, manifests, and source ULNs of a force requirement	Sealift ULNs: 10 C-Days, Airlift ULNs: 3 C-Days, Local or CULT Ground Transportation: 30 days	Sealift ULNs: 30 C-Days, Airlift ULNs: 7 C-Days, Local or CULT Ground Transportation: 60 days	
3.5 Shipload Planning and Manifesting	Table 3: TC-AIMS II ORD: Capability to store and process cargo data details for export to shipload planning load planning systems in support of port operations and embarkation	Cargo detail data for 5 ships at a single terminal or water port during a 72 hour operation	Cargo detail data for 10 ships at a single terminal or water port during a 72 hour operation	
3.6 Aircraft Load Planning and Manifesting	Table 3: TC-AIMS II ORD: Maintain and store detail data for aircraft sorties at a single terminal	Cargo and aircraft detail data for 50 sorties at a single air terminal during a 24 hour day	Cargo and aircraft detail data for 100 sorties at a single air terminal during a 24 hour day	

TEMP ATTACHMENT 5: CRITICAL TECHNICAL PARAMETERS MATRIX				
Specific Performance Requirements	**Required Performance**	**Threshold**	**Objective**	**Notes**
3.7 Rail Load Planning	Table 3: TC-AIMS II ORD:	Cargo detail data for 25,000 shipment units	Cargo detail data for 60,000 shipment units	A single plan or aggregate of several plans must be able to contain cargo detail data for up to 25,000 individual pieces of cargo (Threshold).
3.8 Bills of Lading	Table 3: TC-AIMS II ORD: Receive, Prepare, Generate, and Transmit Bills of Lading (GBLs/CBLs), Tonnage Distribution Roster (TDRs), or Transportation Control Movement Documents (TCMDs) per 24 hour day	GBLs & CBLs: 500 each, TCMDs: 1,000 each, TDRs: 25 each	GBLs & CBLs: 1,000 each, TCMDs: 5,000 each, TDRs: 100 each	
4.0 Interoperability				
4.1 Data Input	4.2a(1): TC-AIMS II ORD: The system must accept data, in time frames that support operational mission or task completion, from the external systems listed in Table 1.	Accept properly formatted data from current systems.	Interface with additional current and future systems.	

TEMP ATTACHMENT 5: CRITICAL TECHNICAL PARAMETERS MATRIX				
Specific Performance Requirements	**Required Performance**	**Threshold**	**Objective**	**Notes**
4.2 AIT Device Inputs	4.2a(2): TC-AIMS II ORD: The system must have the ability to receive input from peripheral Automatic Identification devices capable of reading from the AIT media listed in Table 2.			
4.2.1 AIT Linear Bar Codes	Table 2: TC-AIMS II ORD: Code 3 of 9 MSLs, LOGMARS, TCN Labels	Completeness .90 Accuracy .95	Completeness .95 Accuracy .98	
4.2.2 AIT 2D Barcodes	Table 2: TC-AIMS II ORD: MH 10.8, PDF 417 Labels	Completeness .90 Accuracy .95	Completeness .95 Accuracy .98	
4.2.3 AIT Radio Frequency ID Tags	Table 2: TC-AIMS II ORD: Equipment ID Tags	Completeness .85 Accuracy .90,Speed: Read tag affixed to vehicle moving at 25 mph	Completeness .90 Accuracy .98, Speed: Read tag affixed to vehicle moving at 45 mph	

TEMP ATTACHMENT 5: CRITICAL TECHNICAL PARAMETERS MATRIX				
Specific Performance Requirements	**Required Performance**	**Threshold**	**Objective**	**Notes**
4.2.6 Interoperability: Standardization & Commonality	5e(1): TC-AIMS II ORD: TC-AIMS II must comply with applicable provisions contained in the JTA to include DII/COE, minimum level 6 and use DoD standardized information where compatible.			
4.3 System Outputs	4.2c(2) TC-AIMS II ORD: TC-AIMS II must properly generate reports, forms, labels, tag data, OMC or CAC data so that: the correct data is placed in appropriate fields, that text is readable by humans, or that bar codes, cards, or tags are readable by appropriate TC-AIMS II devices			
4.3.1 System Output Reports	Table 4: TC-AIMS II ORD: Ad-Hoc or Standard (pre-formatted)	Completeness: .95, Accuracy: .95, Speed: Min 1 Page per minute	Completeness: .98, Accuracy: .98, Speed: Min 30 seconds per page	
4.3.2 System Output Standard Forms	Table 4: TC-AIMS II ORD: DD, SF, NAVMC, AF, AE and other paper outputs	Completeness: .95, Accuracy: .95, Speed: Min 1 Page per minute	Completeness: .98, Accuracy: .98, Speed: Min 30 seconds per page	

TEMP ATTACHMENT 5: CRITICAL TECHNICAL PARAMETERS MATRIX				
Specific Performance Requirements	**Required Performance**	**Threshold**	**Objective**	**Notes**
4.3.3 System Output Labels	Table 4: TC-AIMS II ORD: LOGMARS Military Shipping Labels, Equipment ID labels	Completeness: .95, Accuracy: .95, Speed: Min 1 Page per minute	Completeness: .98, Accuracy: .98, Speed: Min 30 seconds per page	
4.3.4 System Output Radio Frequency Tags	Table 4: TC-AIMS II ORD: 256 kb larger capacity	Completeness: .875, Accuracy: .875, Speed: Min 1 tag per minute	Completeness: .90, Accuracy: .90, Speed: Min 1 tag per sec	
5.0 Reliability, Availability, and Maintainability				
5.1 System Reliability	4.4a: TC-AIMS II ORD: Given a 12 hour operation cycle, TC-AIMS shall have a Mean Time Between Operational Mission Failure (MTBOMF) of:	300 hours	500 hours	NOTE: MTBOMF is calculated by dividing total operating time by the number of MEF. Total operating test time is calculated by adding operational time, corrective maintenance time, and preventive maintenance time together.

TEMP ATTACHMENT 5: CRITICAL TECHNICAL PARAMETERS MATRIX				
Specific Performance Requirements	**Required Performance**	**Threshold**	**Objective**	**Notes**
5.2 System Availability	4.4b(1): TC-AIMS II ORD: TC-AIMS II must be available	.95 availability	.975 availability	Availability is based on the presumption of a fully operational TC-AIMS II workstation. From the moment the user needs the system to the time the user concludes a session is measured for availability. Any downtime occurring during the measured period is chargeable for availability.
5.2.1 System Non-Availability (Restore System) (Immediate Action)	4.4b(2): TC-AIMS II ORD: Non-Availability will be correctable by simply rebooting the computer and the reboot will take l of the time and takes less than three minutes	Correctable 90% with reboot of three minutes or less	Correctable 90% with reboot of three minutes or less	
5.2.2 System Non-Availability (Restore System) (Deliberate Action)	4.4b(3): TC-AIMS II ORD: Non-Availability is correctable with deliberate action and support by help desk	System Restored within 2 hours 80% of the time	System Restored within 2 hours 80% of the time	
5.2.3 System Non-Availability (Restore System)	4.4b(4): TC-AIMS II ORD: For help desk calls that cannot be successfully corrected within 2 hours, the problem will be corrected	System Restored within 24 hours 99% of the time	System Restored within 24 hours 99% of the time	

TEMP ATTACHMENT 5: CRITICAL TECHNICAL PARAMETERS MATRIX				
Specific Performance Requirements	**Required Performance**	**Threshold**	**Objective**	**Notes**
5.3 System Maintainability	4.4c: TC-AIMS II ORD: TC-AIMS II must be maintainable			
5.3.1 System Operation MTTR	4.4c(2): TC-AIMS II ORD: Mean Time to Repair (MTTR) at the organizational (user) level (system operation) is	1 hour	30 minutes	
5.3.2 Lost Information MTTR	4.4c(3): TC-AIMS II ORD: Mean Time to Repair (MTTR) at the organizational (user) level (lost information) is	8 hours	1 hour	
6.0 Mobility, Deployability, and Transportability	4.5a: TC-AIMS II ORD: TC-AIMS II Must be capable of movement to, from, and within the Joint or Service Component Area of Operations			

ATTACHMENT 6 – HARDWARE COMPONENTS AND SOFTWARE

The following hardware configurations are currently being utilized to develop and test the TC-AIMS II software in the PM TIS SDF Test Lab. These configurations include servers, desktop computers, notebook computers and Automated Information Technology (AIT) equipment. The configurations are not scaled to support any particular Service operational requirement, but will be used to determine the minimum acceptable configurations for operating the TC-AIMS II application, and to support the data storage requirement of the ORD.

These configurations will be reevaluated and continue to evolve throughout the development process.

Upon completion of successful testing there may be changes to these configurations to ensure acceptable system performance.

During the interim new equipment should be purchased at the standard market equivalent. It is not required or expected that these specific configuration and manufacturer's models be purchased.

The identified hardware specifications (e.g. hard drive, RAM, etc) considers the total requirement for co-hosting the applications specified in the Single Platform Initiative. (TC-AIMS II, AALPS, ICODES, DS2T, DAMMS-R).

Hardware Profiles and Software

Regional Node - Application Server Configuration

Major Component	IBM NetFinity x360, rack mounted server
Processor	2 GHz with 2 MB L3 cache
Number of Processors	Two or four depending on role
RAM	2 GB or 4 GB depending on role
Hard Drive	18.2 GB
Operating System	Microsoft Windows 2000 Server
Network Interfaces	10/100 Ethernet NIC, 1 SX fibre NIC
CD	24x CD-ROM
Floppy Drive	3.5 “floppy disk drive
Backup Media	Via SprectraLogic tape drive system
COTS Software Applications (Note: These COTS products are distributed across multiple servers)	Citrix MetaFrame XPe Citrix Secure Gateway Citrix NFuse Classic Citrix Secure Ticketing Agent JBoss J2EE Application Server
TIS Application Code	TC-AIMS II (PowerBuilder and Java), AALPS, ICODES, DAMMS-R, DS2T
Data Protection	Liebert Silicon Backup Power System
Cables, Hubs	SFP fiber, multimode fiber, CAT 5e, terminated into Cisco 6513
System Board	x360, 3u, 4 way, supports up to 4 processors of 2.0 GHz
Warranty	Five year on-site parts and labor warranty, next business day response

Regional Node - Database Server Configuration

Major Component	IBM NetFinity x440, rack mounted server
Processor	2 GHz with 2 MB L3 cache
Number of Processors	four
RAM	4 GB
Hard Drive	36.4 GB
Operating System	Microsoft Windows 2000 Advanced Server
Network Interfaces	10/100 Ethernet NIC, 1 SX fibre NIC
CD	24x CD-ROM
Floppy Drive	3.5 “floppy disk drive
Backup Media	Via SprectraLogic tape drive system
COTS Software Applications	Sybase ASE relational database management system
Data Protection	Liebert Silicon Backup Power System
Cables, Hubs	SFP fiber, multimode fiber, CAT 5e, terminated into Cisco 6513
System Board	X440, 4u, 8 way, supports up to 4 processors of 2.0 GHz
Warranty	Five year on-site parts and labor warranty, next business day response

Enterprise Management Server Configuration

Major Component	IBM NetFinity x345, rack mounted server
Processor	2.4 GHz with 512 KB L3 cache
Number of Processors	two
RAM	2 GB
Hard Drive	18.2 GB
Operating System	Microsoft Windows 2000 Server
Network Interface	Dual 10/100/1000 Ethernet NIC, 1 SX fibre NIC
CD	24x CD-ROM
Floppy Drive	3.5 “floppy disk drive
Backup Media	Via SprectraLogic tape drive system
COTS Software Applications (Note: These COTS products are distributed across multiple servers)	Microsoft Operations Manager System Management Server Ciscoworks Cisco Security Manager Norton Antivirus Prognosis for Windows Microsoft SQL Server
Data Protection	Liebert Silicon Backup Power System
Cables, Hubs	SFP fiber, multimode fiber, CAT 5e, terminated into Cisco 6513
System Board	x345, 2u, 2 way, supports up to 4 processors of 2.4 GHz
Warranty	Five year on-site parts and labor warranty, next business day response

Deployment Server

Major Component	Pedestal footprint\Tower configuration and Rack Mounted options available. Dual Hot swappable power supplies 110/220VAC, auto-sensing/switching
Processor Speed	Dual Processor XEON 2Ghz/512 Cache
RAM	4GB RAM minimum with ECC DDR
Monitor	15" SVGA monitor (rack mounted when applicable)
Video Card	8Mb video with SVGA support integrated on motherboard or PCI/AGP card
Hard Drive	Minimum two 18.2 GB Ultra160 SCSI disk drives and eight 18.2 GB HD (configured as four RAID1 drives) Ultra160 SCSI disk drives on a dual channel RAID controller drives with 15k RPM formatted NTFS & configured as:
Operating System	Microsoft Windows 2000 Advanced Server SP2 pre-installed with License and CD media
External Mouse	PS2 or USB style mouse with mouse pad
Keyboard	PS2 or USB style Windows keyboard
Network Connection	Dual Integrated with System Board 10/100 MHz Dual Port Adapter NIC (Teamable)
CD	CD-ROM (CD-RW) drive, EIDE
Floppy Drive	3.5" Floppy disk drive
Speakers	None
Storage/Backup	20/40GB DDS-4 DAT tape drive, SCSI with controller
Backup Media	Four DDS-4 tape cartridges and one cleaning tape
Backup Software	Veritas Backup Exec software, Single Server version with CD media
Data Protection (UPS)	700VAC auto-sensing/switching uninterruptible power supply
Cables, Hubs	14 foot snag proof UTP Cat5 patch cable, pre-terminated RJ-45 connectors on both ends
Other	One 25 pin parallel port
	One 9 pin serial port UART 16550 compatible
	Electronic Documentation
	4 USB ports
System Board	Support 2 Intel Xeon processors, E7500 chipset and 400 mhz system buses, triple peir PCI buses, Integrated SCSI adapter, integrated video adapter, integrated dual NIC.
Warranty	Five year on-site parts and labor warranty, Next Business Day response (CONUS), 72 hour response (OCONUS).

Deployable Laptop/Server

Major Component	Three spindle design (hard drive, floppy and CD-ROM self contained in box)
Processor Speed	Pentium 4 Processor minimum 2GHz/512 Cache or higher
RAM	1GB
Monitor	15” Active Matrix TFT SVGA display, minimum
Video Card	16Mb video with SVGA support, minimum
Hard Drive	60 GB hard disk (minimum) partitioned C: 8 GB Labeled "System" D: 12 GB Labeled "Apps" E: 40 GB Labeled "TC-AIMS"
Operating System	Microsoft Windows 2000 Professional and SP2 pre-installed with CD media
	Windows XP License and Media
External Mouse	USB Mouse with mouse pad
Keyboard	Windows style keyboard, integrated
	Integrated pointing device
	PS/2 style mouse/keyboard port
Network Connection	10/100TX Ethernet, integrated or PCMCIA vice integrated options available.
Modem	56K V.90 modem, integrated, configured to COM1 or PCMCIA vice integrated options available.
CD	6X/4X/24X CD-RW drive, minimum
Floppy Drive	
Speakers	Integrated speakers
Storage/Backup	3.5” 1.44MB Floppy disk drive
External Case	Soft sided carrying case w/shoulder strap, capable of holding all accessories
Hardware Protection	Surge suppressor for notebook, APC Pnote Pro or equivalent
Cables, Hubs	14 foot snag proof UTP Cat5 patch cable, pre-terminated RJ-45 connectors on both ends
Productivity SW	Microsoft Office 2000 Professional and CD Media pre-installed, XP Professional License
Other	Two Type II or one Type III PCMCIA slots
	One 25 pin parallel port
	One 9 pin serial port UART 16550 compatible
	Two USB port

	Electronic Documentation
System Board	Power supply, 110-220VAC, auto-sensing, auto-switching
Warranty	Five year on-site parts and labor warranty, Next Business Day response (CONUS), 72 hour response (OCONUS).

Automatic[7] Identification Technology

MFG	Model	Description
Intermec	HHD J2020C	Hand Held Data collection device without integrated 2D scanner, 1MB memory
Intermec	HHD J2020D	Hand Held Data collection device with integrated 2D scanner, 4MB memory
Intermec	2020 COMM Dock, 5010CQ	Communications docking station, charger/discharger
Zebra	Z4000	Label Printer (6X8 ribbon and label stock)
Zebra	PT400	Portable Label Printer
Intermec	4100/4400	Label Printer (6X8 ribbon and label stock)
Savi	1010 A2	SAVI Active Fixed RFID Interrogator
Savi	SDS-1001	Savi Docking Station for RFID tags or transponders
Savi	ST-410-118	RFID Tags, 128KB memory, direction activation and audible locator
Symbol	PDT-7240	1D and 2D Scanner
Symbol	(For PDT-7240) SYMBOL 21-37548-01, 23844-00-00	PDCT B Class AC Adapter includes Power Supply and Line Cord.
Symbol	(For PDT-7240) SYMBOL CRD7200-10R0-000, 50-14001-004,23844-00-00, 50-16002-018, 25-19299-01	PDCT B Class Communication Docking Station (Single-Slot) with, Spare Battery Charger includes Power Supply, Line Cord, Power Cable Assy and Communication Cable

Other Hardware -TBD

MFG	Model	Description

[7] Also covers wireless technology; hardware items to be added